

**JP-15X ELECTRONIC TYPEWRITER
SERVICE MANUAL & PARTS REFERENCE LIST**

MECHANICAL PORTION

brother®

MODEL; EM-80

/ EA-85

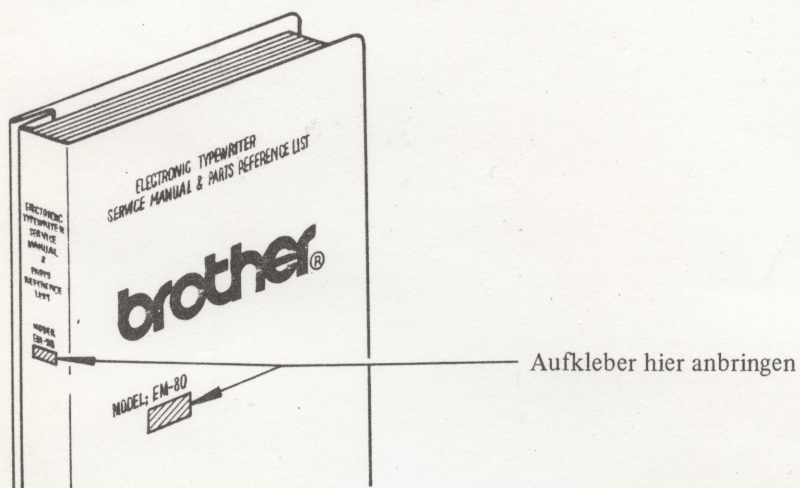
EM-85 WARTUNGSANLEITUNG UND STÜCKLISTE

[MECHANIK]

Diese Wartungsanleitung und Stückliste für das Modell EM-85 (ausgenommen mit Modell EM-80 gleichlautende Abschnitte) in den Katalog für das Modell EM-80 einlegen.

Den mit dieser Liste mitgesandten Aufkleber für das Modell EM-85 am Einband des EM-80 Katalogs anbringen.

1. Anbringen des Aufklebers für Modell EM-85



2. Die Blätter gemäß nachfolgender Tabelle einlegen.

Wartungsanleitung

Seite	Austauschen	Zusätzlich
8	☐	
10-1		☐
44	☐	
45	☐	
59	☐	
59-2		☐
63	☐	
63-2		☐
63-4		☐
66	☐	
67	☐	
69	☐	
69-2		☐
69-4		☐
71	☐	
71-2		☐
73	☐	
73-2		☐
77	☐	
77-2		☐

Stückliste

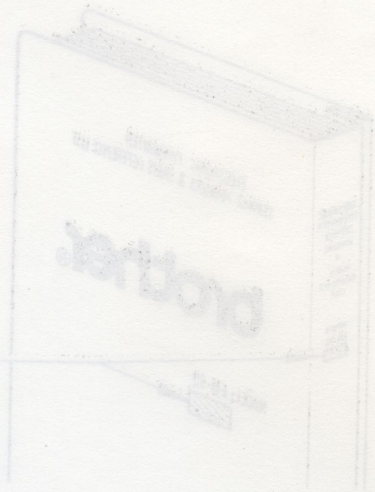
Seite	Austauschen	Zusätzlich
1	☐	
3	☐	
9	☐	
35	☐	
37	☐	
77	☐	
102	☐	
103	☐	
104		☐

EM-88 WARTUNGSANLEITUNG UND STÜCKLISTE

(MECHANIK)

Diese Wartungsanleitung und Stückliste für das Modell EM-88 (ausgenommen mit Modell EM-80 gleichstehende Ab-
schritte) in den Katalog für das Modell EM-80 einlegen.
Den mit dieser Liste mitgeführten Aufkleber für das Modell EM-88 am Einband des EM-80 Katalogs anbringen.

1. Anbringen des Aufklebers für Modell EM-88



Aufkleber hier anbringen

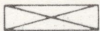
2. Die Blätter gemäß nachfolgender Tabelle einlegen.

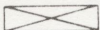
Wartungsanleitung

Seite	Ausdrucken	Zusatz
8	☐	☐
10-1	☐	☐
14	☐	☐
15	☐	☐
20	☐	☐
20-2	☐	☐
63	☐	☐
63-2	☐	☐
63-4	☐	☐
66	☐	☐
67	☐	☐
68	☐	☐
69	☐	☐
70-1	☐	☐
71	☐	☐
72	☐	☐
73	☐	☐
74	☐	☐
75	☐	☐
76	☐	☐
77	☐	☐
77-2	☐	☐

Stückliste

Seite	Ausdrucken	Zusatz
1	☐	☐
2	☐	☐
3	☐	☐
4	☐	☐
5	☐	☐
6	☐	☐
7	☐	☐
8	☐	☐
9	☐	☐
10	☐	☐
10-1	☐	☐
10-2	☐	☐
10-3	☐	☐
10-4	☐	☐

- c)  Ordering procedure of parts for different territories.

The code column  part indicates the part utilized by different territories.

The Parts Code and Parts Name are separately indicated in the lower space as Special Parts.

Please order the required parts by referring to the disassembly drawing and Special Parts.

- (*) The code column  part is CIRCUIT BOARD ASSEMBLY, PRINTING ELEMENT, COVER, NAME PLATE, INSTRUCTION BOOK, RATING PLATE, CARTON.

- d) Ordering procedure of Electrical Parts

The Electrical Parts differ in accordance to the utilizing electrical standards of the territory.

The disassembly drawings are drawn separately to match the electrical standards of each territory.

Upon ordering, please refer to the disassembly drawing upper space for separate standards of each territory.

The following described the definite communication and indicating items.

Model Number

Parts Code

Parts Name

Electrical Standards

Reference Numbers
(Main & sub)

Quantity

[Indication example]

Model No.	Parts Code	Parts Name	Electrical Standards	Reference Nos. (Main & sub)	Quantity
EM-80	575638001	Filter Circuit Board Assembly	200~240V	TC-050-1	2 pcs.

GROUP NAME	(EM-80)	(EM-85)	
	MAIN REF. NO.	PAGE NO.	MAIN REF. NO.
1. KEY TOP	ZZ-15X	10 ~ 27	←
2. PRINTING ELEMENT	TC-002	28 ~ 29	←
3. KEY TOP ATTACHMENT	TC-003	30 ~ 31	←
4. PAPER METER	TC-016	32 ~ 33	←
5. RIBBON FEED MECHANISM	TC-	34 ~ 37	←
6. PLATEN MECHANISM	TC-031	38 ~ 41	←
7. CHASSIS	TC-033	42 ~ 43	←
8. CHASSIS ATTACHMENT	TC-034	44 ~ 45	←
9. CARRIAGE HEAD MECHANISM	TC-043	45 ~ 49	←
10. CARRIAGE HEAD ATTACHMENT	TC-044	50 ~ 51	
11. FILTER CIRCUIT BOARD	TC-050	52 ~ 53	←
12. POWER SUPPLY CORD	TC-051	54 ~ 55	←
13. MOTOR	TC-054	56 ~ 57	←
14. HAMMER SOLENOID (EM-80)	TC-055	58 ~ 59	
HAMMER SOLENOID (EM-85)		59-1 ~ 59-2	TD-055
15. COVER (EM-80)	TC-061	60 ~ 63	
COVER (EM-85)		63-1 ~ 63-4	TD-061
16. DETECTOR	TC-100	64 ~ 65	←
17. RELAY CIRCUIT BOARD	TC-101	66 ~ 67	←
18. LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD (EM-80)	TC-102	68 ~ 69	
LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD (EM-85 Memory 4K)		69-1 ~ 69-2	TD-102
LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD (EM-85 Memory 8K)		69-3 ~ 69-4	TE-102
19. POWER SUPPLY CIRCUIT BAORD (EM-80)	TC-104	70 ~ 71	
POWER SUPPLY CIRCUIT BOARD (EM-85)		71-1 ~ 71-2	TD-104
20. POWER SUPPLY TRANSFORMER	TC-105	72 ~ 73	←
21. LCD CIRCUIT BOARD		73-1 ~ 73-2	TD-108
22. ACCESSORY	TC-910	74 ~ 75	←
23. PRINTED MATTER (EM-80)	TC-920	76 ~ 77	
PRINTED MATTER (EM-85)		77-1 ~ 77-2	TD-920
24. PACKING MATERIALS	TC-930	78 ~ 79	←
25. ADJUSTING TOOL KIT	ZX-15X	80 ~ 81	←

KEY TOP (FUNCTION KEYS)

Model: EM-85

MAIN-REF. NO. ZZ-15X		F1 MODE F2 IMPACT F3 AUTO/JUST F4 LINE F5 PITCH E1 ←→ L IND D1 L MAR R MAR D2 → P IND C1 TAB+ C2 D TAB+ B1 TAB- B2 HOT Z A1 CODE A2 PRE L A3 REPEAT A4 B TAB A5 A6 RELOC BS 1 A7 A8 S SET A9 E14 ← E15 → B14 IN CLR D16 XXX C15 BOLD B15 CTR RMF
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PARTS CODE & PARTS NAME

Model: EM-80

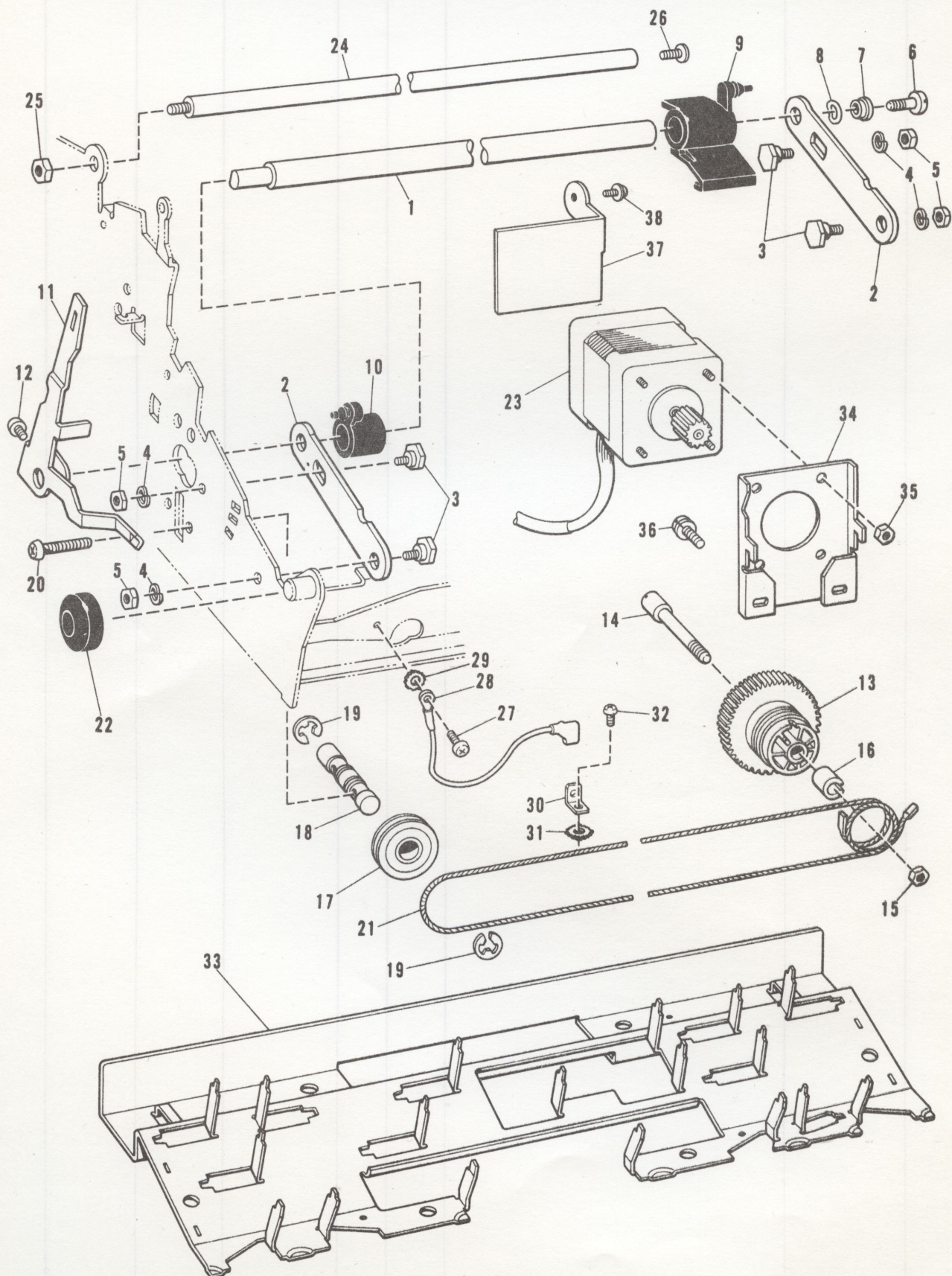
MAIN-REF. NO.	TC-033	Functional group name	CHASSIS					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	576808001	Chassis Unit	1					

CHASSIS ATTACHMENT

Model: EM-80

MAIN-
REF. NO.

TC-034



PARTS CODE & PARTS NAME

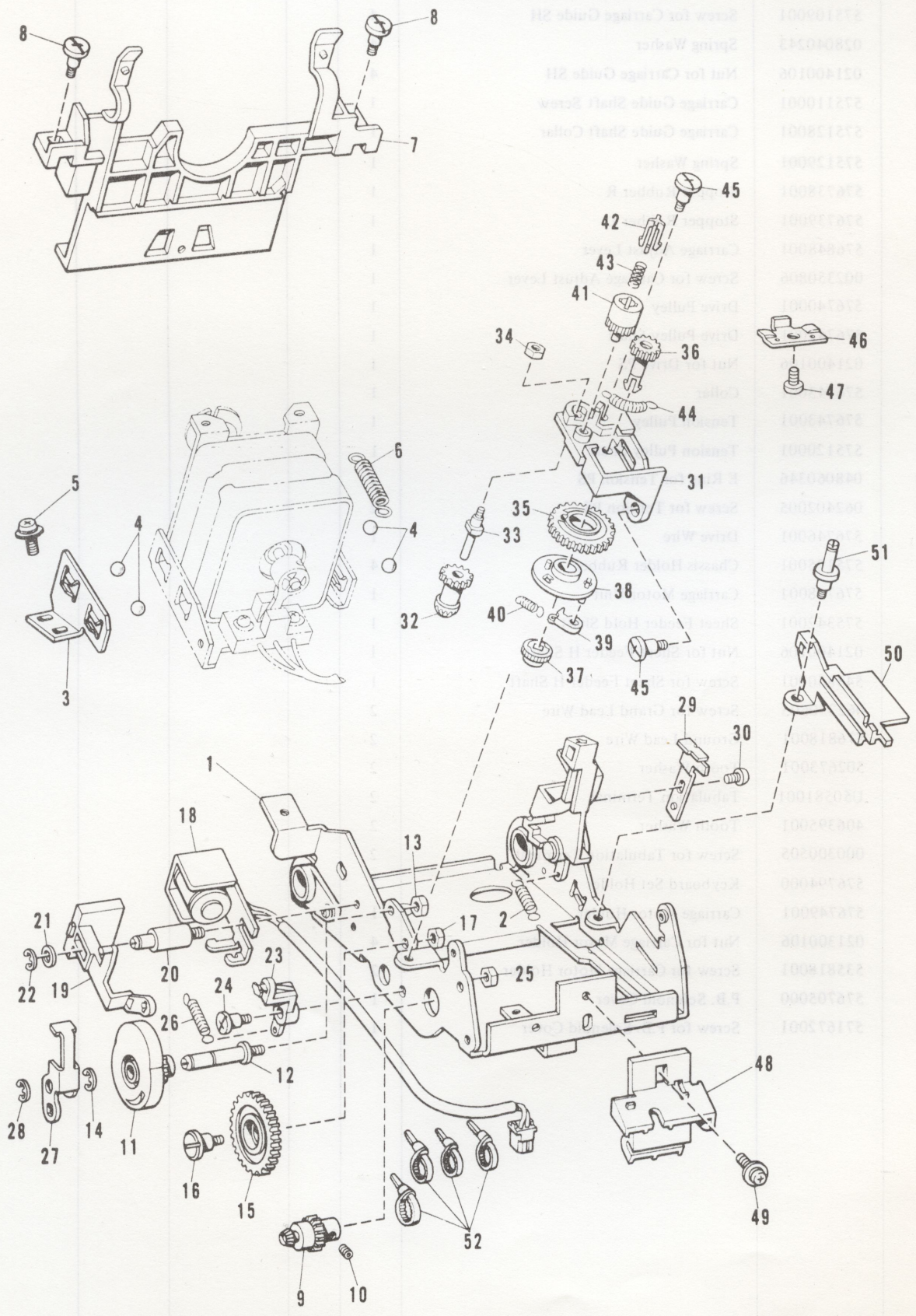
Model: EM-80

MAIN- REF. NO.	TC-034	Functional group name	CHASSIS ATTACHMENT					
SUB- REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	575107001	Carriage Guide Shaft	1					
2	576847001	Carriage Guide Shaft Holder	2					
3	575109001	Screw for Carriage Guide SH	4					
4	028040243	Spring Washer	4					
5	021400106	Nut for Carriage Guide SH	4					
6	575110001	Carriage Guide Shaft Screw	1					
7	575128001	Carriage Guide Shaft Collar	1					
8	575129001	Spring Washer	1					
9	576738001	Stopper Rubber R	1					
10	576739001	Stopper Rubber L	1					
11	576848001	Carriage Adjust Lever	1					
12	002350806	Screw for Carriage Adjust Lever	1					
13	576740001	Drive Pulley	1					
14	576742001	Drive Pulley Shaft	1					
15	021400106	Nut for Drive PS	1					
16	576843001	Collar	1					
17	576743001	Tension Pulley	1					
18	575120001	Tension Pulley Shaft	1					
19	048060346	E Ring for Tension PS	2					
20	062402005	Screw for Tension PS	2					
21	576746001	Drive Wire	1					
22	575125001	Chassis Holder Rubber	4					
23	576748001	Carriage Motor Unit	1					
24	575342001	Sheet Feeder Hold Shaft	1					
25	021400106	Nut for Sheet Feeder H Shaft	1					
26	543850001	Screw for Sheet Feeder H Shaft	1					
27	062350605	Screw for Grand Lead Wire	2					
28	576818001	Ground Lead Wire	2					
29	502673001	Tooth Washer	2					
30	U50581001	Tabulation Terminal	2					
31	406395001	Tooth Washer	2					
32	000300505	Screw for Tabulation Terminal	2					
33	576794000	Keyboard Set Holder	1					
34	576749001	Carriage Motor Holder	1					
35	021300106	Nut for Carriage Motor Holder	4					
36	535818001	Screw for Carriage Motor Holder	2					
37	576705000	P.B. Solenoid Cover	1					
38	571672001	Screw for P.B. Solenoid Cover	1					

CARRIAGE HEAD MECHANISM

Model: EM-80

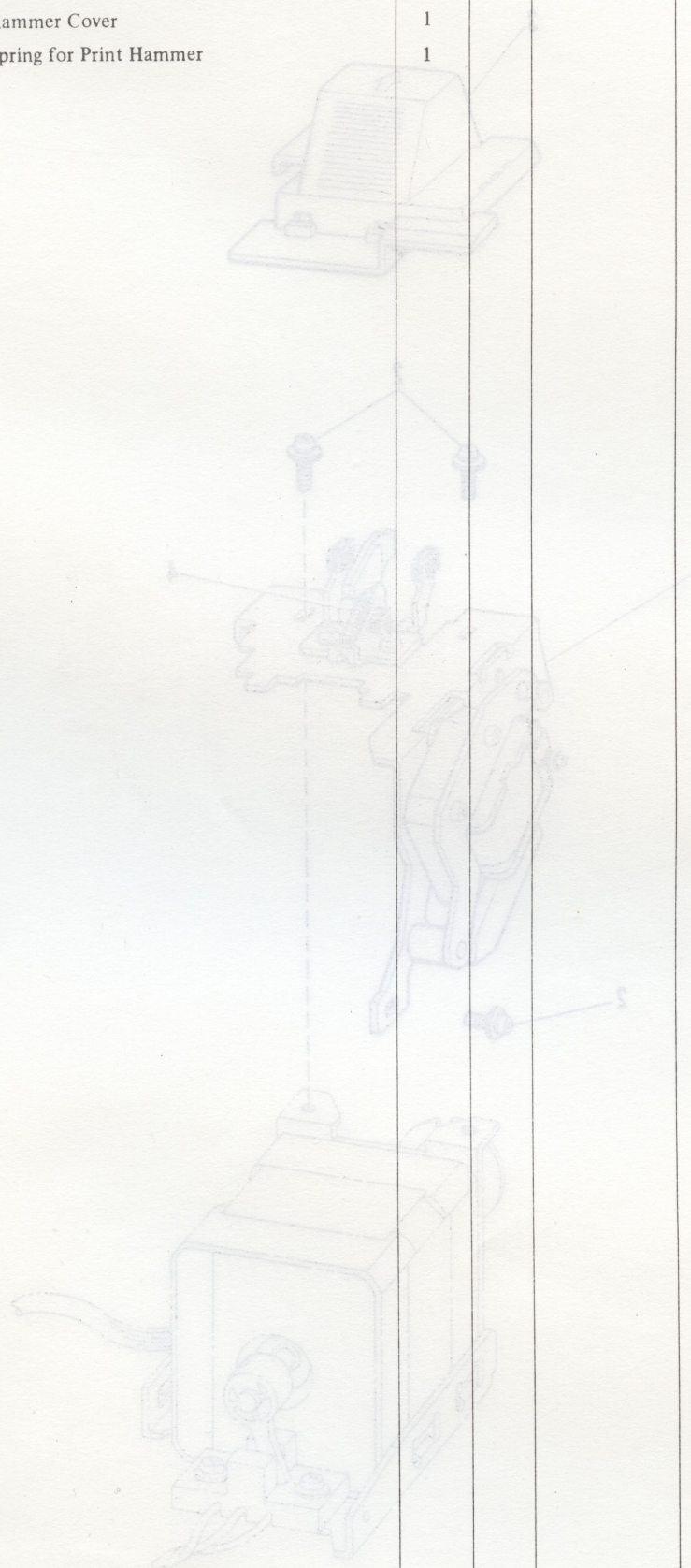
MAIN-REF. NO.	TC-043
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-055	Functional group name	HAMMER SOLENOID					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	U05751001	Hammer Holder Unit (With 4)	1					
2	571823001	Screw for Hammer Holder	3					
3	U05776001	Hammer Cover	1					
4	U05922001	Spring for Print Hammer	1					

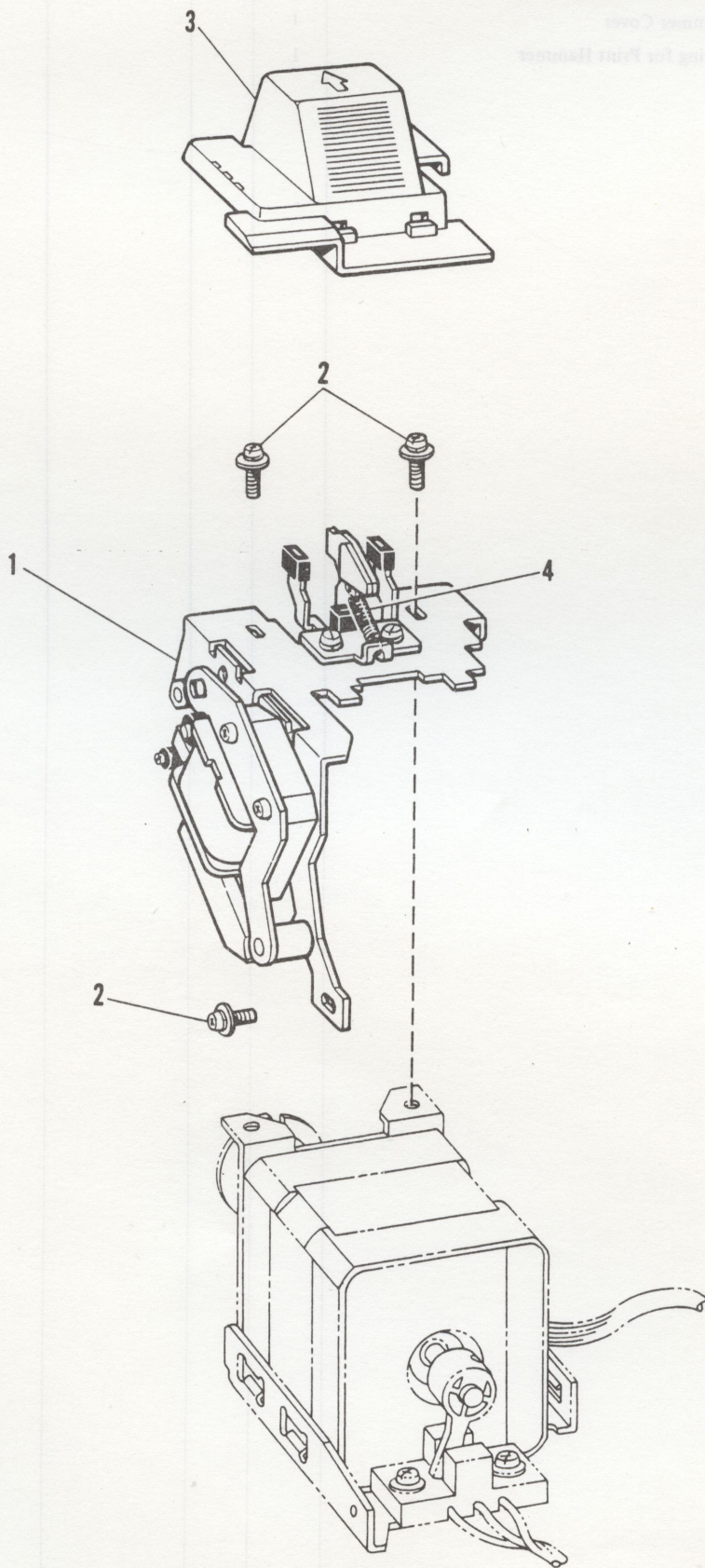


HAMMER SOLENOID

Model: EM-85

MAIN-
REF. NO.

TD-055



PARTS CODE & PARTS NAME

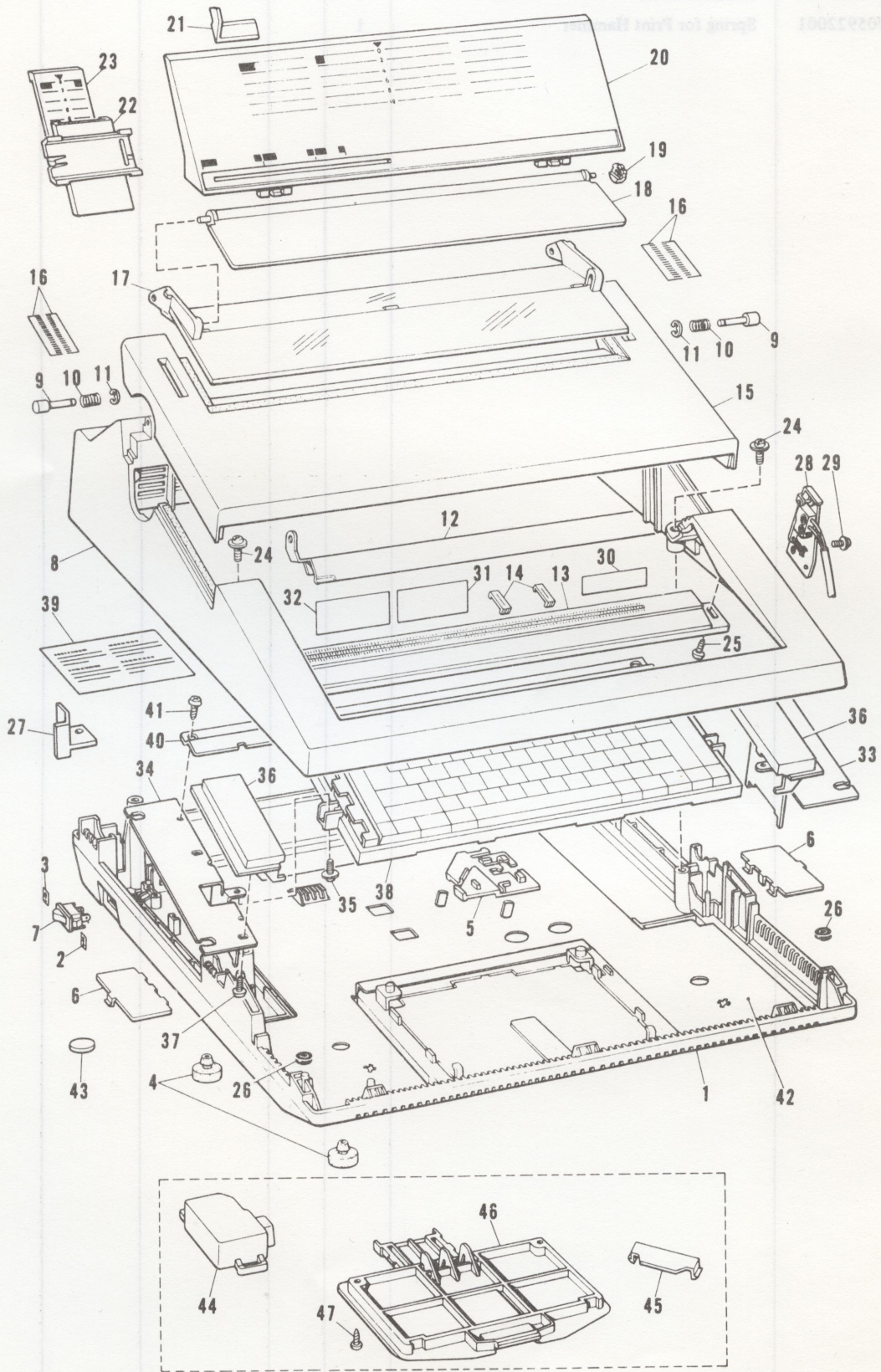
Model: EM-85

MAIN-REF. NO.	TD-055	Functional group name	HAMMER SOLENOID					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	U06122001	Hammer Holder Unit (with 4)	1					
2	571823001	Screw for Hammer Holder	3					
3	U06079001	Hammer Cover	1					
4	U05922001	Spring for Print Hammer	1					

COVER

Model: EM-80

MAIN-REF. NO.	TC-061
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PARTS CODE & PARTS NAME

Model: EM-80

Model: EM-80

MAIN-REF. NO.	TC-061	Functional group name	COVER						
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK	
						FROM	UP TO		
39	575329001	Label for CAUTION	1						
40	576833001	Margin Scale Base Holder	1						
41	571672001	Screw for Margin Scake Base Holder	2						
42		Lower Cover Plate	1						
43	576629000	Fuse Holder Cover (FEMKO only)	1						
44	576632001	Filter Circuit Board Cover (C.S.A. only)	1						
45	575199001	Flat Cable Holder (C.S.A. only)	1						
46	576061002	Keyboard Lower Cover (C.S.A. only)	1						
47	576161001	Screw for K.B. Lower Cover (C.S.A. only)	2						

SPECIAL PARTS

NAME COLOR & DESCRIPTION	Lower Cover Unit		Switch Indicator ON		Switch Indicator OFF		Rating Plate		Lower Cover Plate			
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	
Black-101 (Others)	1A	575195002										
Black-101 (B.S. only)	1B	576990002										
Black-101 (C.S.A. only)	1C	576820002										
B.S. only			2A	576304001	3A	576305001						
Others			2B	576325001	3B	576326001						
C.S.A. only									42A	576623001		
Others									42B	575202001		
B EM-80 115V 50/60Hz							32A	576813001				
B EM-80 UL							32B	576976001				
B EM-80 CSA							32C	576977001				
B EM-80 (FRENCH)							32D	U70207001				
B EM-80 220V 50/60Hz							32E	U70208001				
B EM-80 ⑆							32F	U70206001				
B EM-80 TUV							32G	576982001				
B EM-80 SEV							32H	576978001				
B EM-80 NEMKO							32I	576979001				
B EM-80 240V 50Hz							32J	U70210001				
B EM-80 BS							32K	576980001				
B EM-80 230V 50/60Hz							32L	U70209001				
B EM-80 FEMKO							32M	576981001				
B EM-80 115V 60Hz							32N	U70203001				
B EM-80 120V 60Hz							32P	U70204001				
B EM-80 110V 60Hz							32Q	U70202001				
B EM-80 200V 50Hz							32R	U70205001				

Caution: To visualize the



part and ordering procedures, please refer to the Preface.

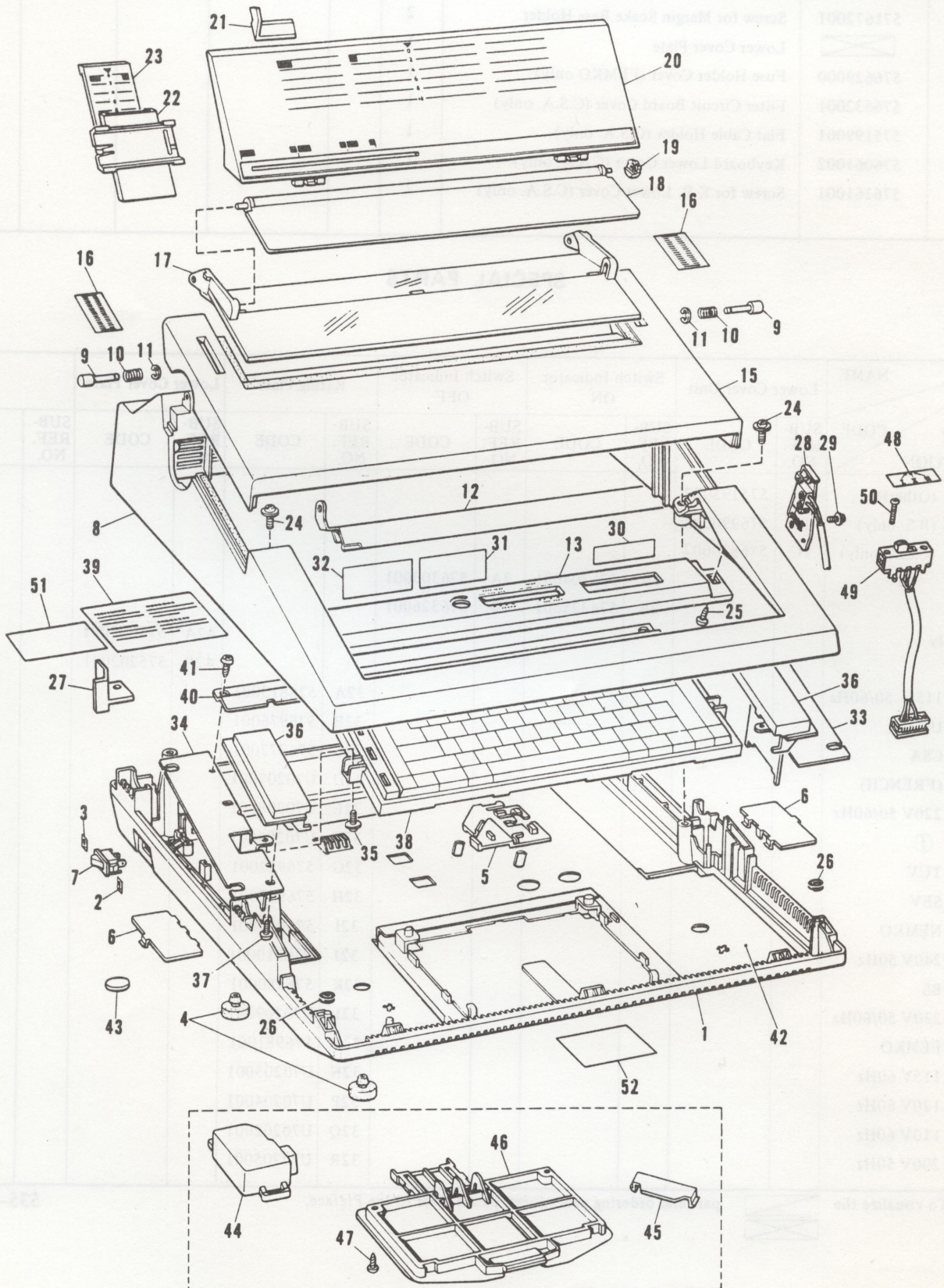
535-411-061

COVER

Model: EM-85

MAIN-
REF. NO.

TD-061



Model: EM-85

PARTS CODE & PARTS NAME

MAIN-REF. NO.	TD-061	Functional group name	COVER					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Lower Cover Unit (with 2-4, 42)	1			180-01		
2		Switch Indicator ON	1					
3		Switch Indicator OFF	1					
4	575201001	Rubber Foot	4					
5	576793001	Cable Holder	1					
6	575200001	Wire Harness Holder	2					
7	575198001	ON/OFF Switch	1					
8	576823001	Upper Cover Unit (with 9-11)	1					
9	575208001	Top Cover Shaft	2					
10	575249001	Spring for Top Cover Shaft	2					
11	048020346	E-Ring for Top Cover Shaft	2					
12	575209001	Paper Rest	1					
13	U71639001	LCD Cover	1					
15	U71659002	Top Cover Unit	1					
16	U71278001	Cover Blind PR	2					
17-19	575220001	Acoustic Cover Unit	1					
17	575221001	Acoustic Cover	1					
18	575222001	Blinder	1					
19	576722001	Collar	1					
20-23	575223001	Paper Supporter Unit	1					
20	575224001	Paper Supporter	1					
21	575225001	Paper Guide	1					
22	573114001	PE Indicator Holder	1					
23	575226001	PE Indicator	1					
24	519483001	Screw for Upper Cover	4					
25	575362001	Screw for LCD Cover	2					
26	575230001	Rubber	4					
27	576824001	Cord Plate	4					
28	576551001	Cover Switch Unit	1					
29	571672001	Screw for Cover Switch Holder	1					
30	572037001	Label for UL Fuse (U.S.A. only)	1					
31	U01810001	Label for F.C.C. (U.S.A. only)	1					
32		Rating Plate	1					
33	576795000	Keyboard Holder R	1					
34	576796000	Keyboard Holder L	1					
35	524921001	Screw for KB Panel	2					
36	576797001	Keyboard Cover	2					
37	U50468001	Screw for Keyboard Cover	4					
38	U71656001	Keyboard Panel 85	1					
39	575329001	Label for CAUTION	1					
40	576833001	Margin Scale Base Holder	1					
41	571672001	Screw for Margin Scale Base Holder	2					
42		Lower Cover Plate	1					
43	576629000	Fuse Holder Cover (FEMKO only)	1					
44	576632001	Filter Circuit Board Cover (C.S.A. only)	1					
45	575199001	Flat Cable Holder (C.S.A. only)	1					
46	576061002	Keyboard Lower Cover (C.S.A. only)	1					
47	576161001	Screw for K.B. Lower Cover (C.S.A. only)	2					
48	575327002	Label for K.B. Selection Switch	1					
49		Keyboard Selection Switch	1					
50	062300407	Screw for K.B. Selection Switch	2					
51	U06397001	Label for ATTENTION	1					
52	U71651001	Label for CARE	1					

Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-421-061

COVER

Model: EM-85

Model: EM-85

COVER

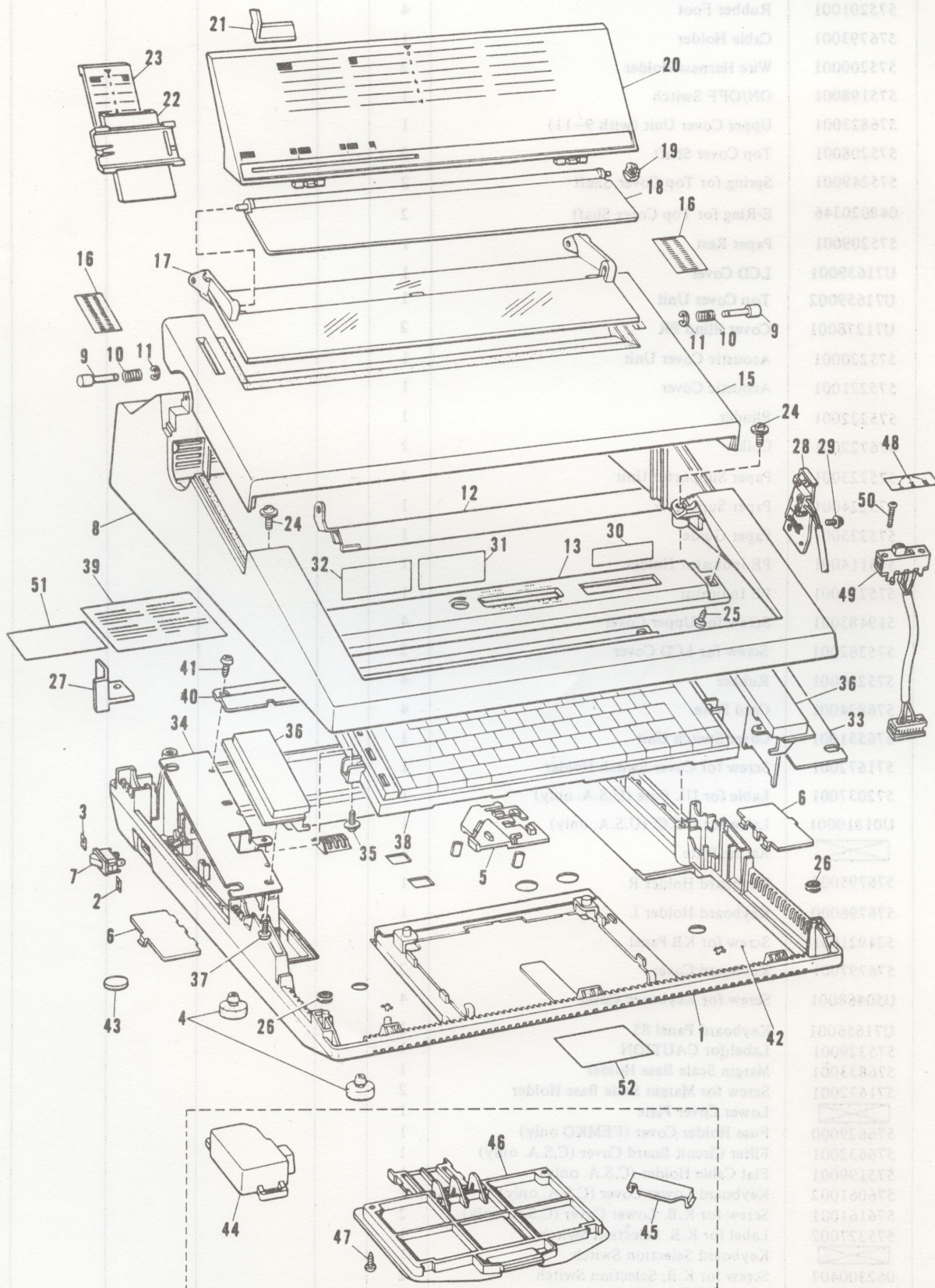
Functional
Group Name

TD-061

MAIN-
REF. NO.

MAIN-
REF. NO.

TD-061



NAME CODE COLOR & DESCRIPTION	Lower Cover Unit		Switch Indicator ON		Switch Indicator OFF		Rating Plate		Lower Cover Plate		Keyboard Selection Switch	
	SUB- REF. NO.	CODE	SUB- REF. NO.	CODE	SUB- REF. NO.	CODE	SUB- REF. NO.	CODE	SUB- REF. NO.	CODE	SUB- REF. NO.	CODE
Black-101 (Others)	1A	575195002										
Black-101 (B.S. only)	1B	576990002										
Black-101 (C.S.A. only)	1C	576820002										
B.S. only			2A	576304001	3A	576305001						
Others			2B	575325001	3B	575326001						
C.S.A. only									42A	576623001		
Others									42B	575202001		
B EM-85 115V 50/60Hz							32A	U71660001				
B EM-85 UL							32B	U71661001				
B EM-85 CSA							32C	U71662001				
B EM-85 (FRENCH)							32D	U71655001				
B EM-85 220V 50/60Hz							32E	U71675001				
B EM-85 (f)							32F	U71674001				
B EM-85 TUV							32G	U71667001				
B EM-85 SEV							32H	U71663001				
B EM-85 NEMKO							32I	U71664001				
B EM-85 240V 50Hz							32J	U71677001				
B EM-85 BS							32K	U71665001				
B EM-85 230V 50/60Hz							32L	U71676001				
B EM-85 FEMKO							32M	U71666001				
B EM-85 115V 60Hz							32N	U71671001				
B EM-85 120V 60Hz							32P	U71672001				
B EM-85 110V 60Hz							32Q	U71670001				
B EM-85 200V 50Hz							32R	U71673001				
American English											49A	U71637001
German											49B	U71707001
King's English											49C	U71707001
French											49D	U71707001
Dutch											49E	U71707001
Swiss (German)											49F	U71637001
Swiss (French)												
Bilingual											49G	U71707001
Spanish (South America)											49H	U71707001
Spanish (Central America)												
Norwegian											49I	U71707001
Spanish for Spain											49J	U71707001
Italian											49K	U71707001
Danish											49L	U71707001
South Africa											49M	U71707001
Swedish											49N	U71707001
Finnish											49P	U71707001
Portuguese											49Q	U71707001
Latin & Greeek											49R	U71637001
Chili											49S	U71707001
Turkish											49T	U71707001
CYPRUS											49U	U71637001

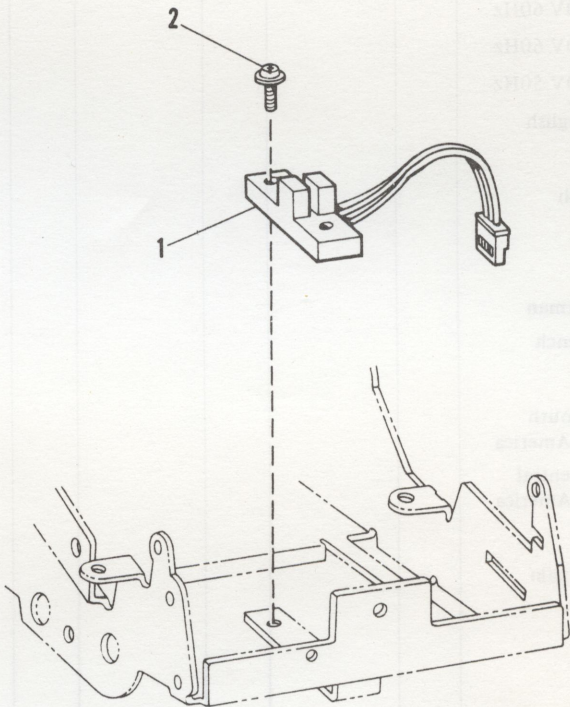
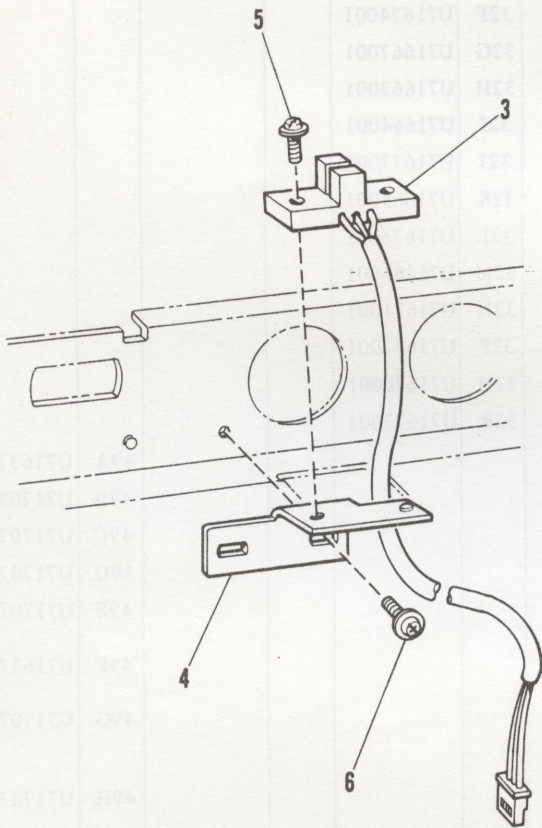
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-421-061

DETECTOR

Model: EM-80

MAIN-REF. NO.	TC-100
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PARTS CODE & PARTS NAME

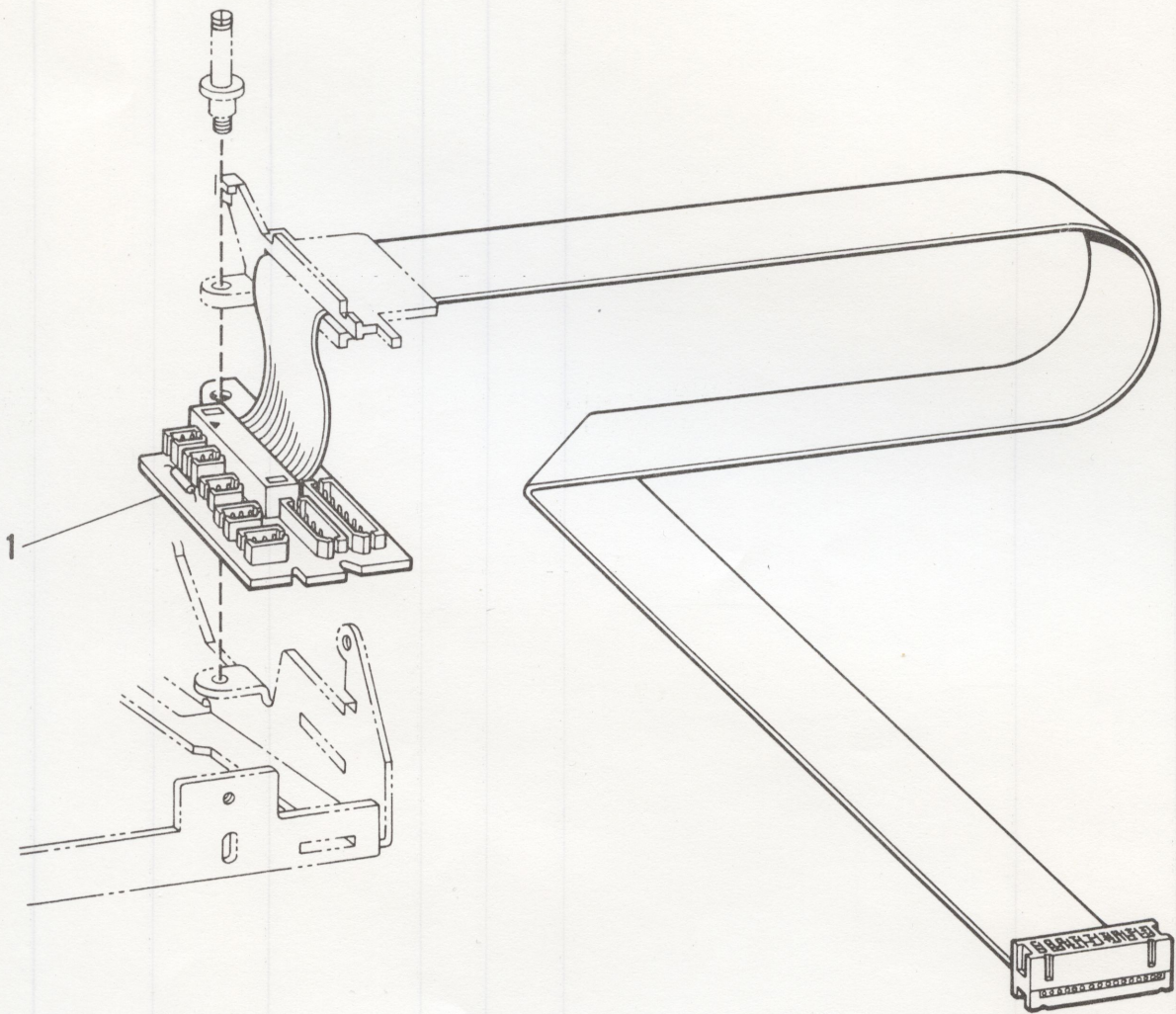
Model: EM-80

MAIN-REF. NO.	TC-100	Functional group name	DETECTOR					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	U05382001	Ribbon Detector	1					
2	573336001	Screw for Ribbon Detector	2					
3	576822001	Carriage Detector	1					
4	576798000	Carriage Detector Holder	1					
5	573336001	Screw for Carriage Detector	1					
6	533658001	Screw for Carriage Detector Holder	1					

RELAY CIRCUIT BOARD

Model: EM-80

MAIN- REF. NO.	TC-101
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PARTS CODE & PARTS NAME

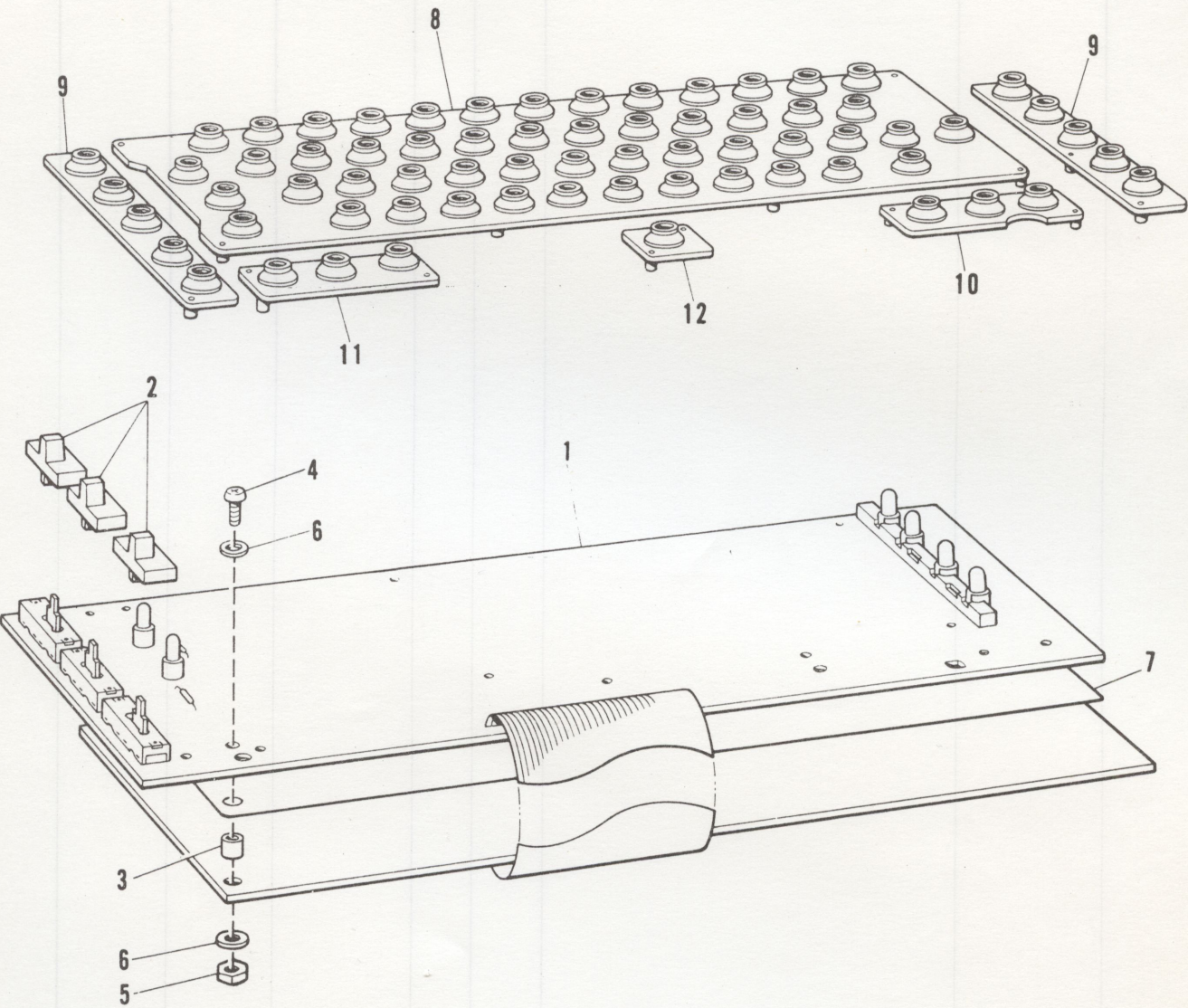
Model: EM-80

MAIN-REF. NO.	TC-101	Functional group name	RELAY CIRCUIT BOARD					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	576821001	Relay Circuit Board Assembly	1					

LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD

Model: EM-80

MAIN- REF. NO.	TC-102
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-102	Functional group name	LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Logic Control with Keyboard Circuit Board Assembly (with 2~12)	1					
2	U05797001	Tip for Slide Switch	3					
3	U05798000	Circuit Board Spacer	2					
4	002301205	Screw for Spacer	2					
5	021300106	Nut for Screw	2					
6	025030133	Washer for Screw	2					
7	575865001	Insulator	1					
8	U05794000	Contact Plate 46K	1					
9	U05796000	Contact Plate 5K	2					
10	U05795000	Contact Plate 3K (Right)	1					
11	U05903000	Contact Plate 3K (Left)	1					
12	U00867000	Contact Plate 1K	1					

NAME COLOR & DESCRIPTION	CODE	Logic Control with Keyboard Circuit Board Assembly (with 2 ~ 12)					
		SUB-REF. NO.	CODE				
American English		1A	576849000				
German		1B	576849004				
King's English		1C	576849003				
French		1D	576849012				
Dutch		1E	576849013				
Swiss (German French)		1F	576849016				
Bilingual		1G	576849002				
Spanish (South America Central America)		1H	576849008				
Norwegian		1I	576849010				
Spanish for Spain		1J	576849014				
Italian		1K	576849005				
Danish		1L	576849011				
South Africa		1M	576849015				
Swedish		1N	576849018				
Finnish		1P	576849019				
Portuguese		1Q	576849020				
Latin & Greek		1R	576849022				
Chili		1S	576849009				
Turkish		1T	576849025				

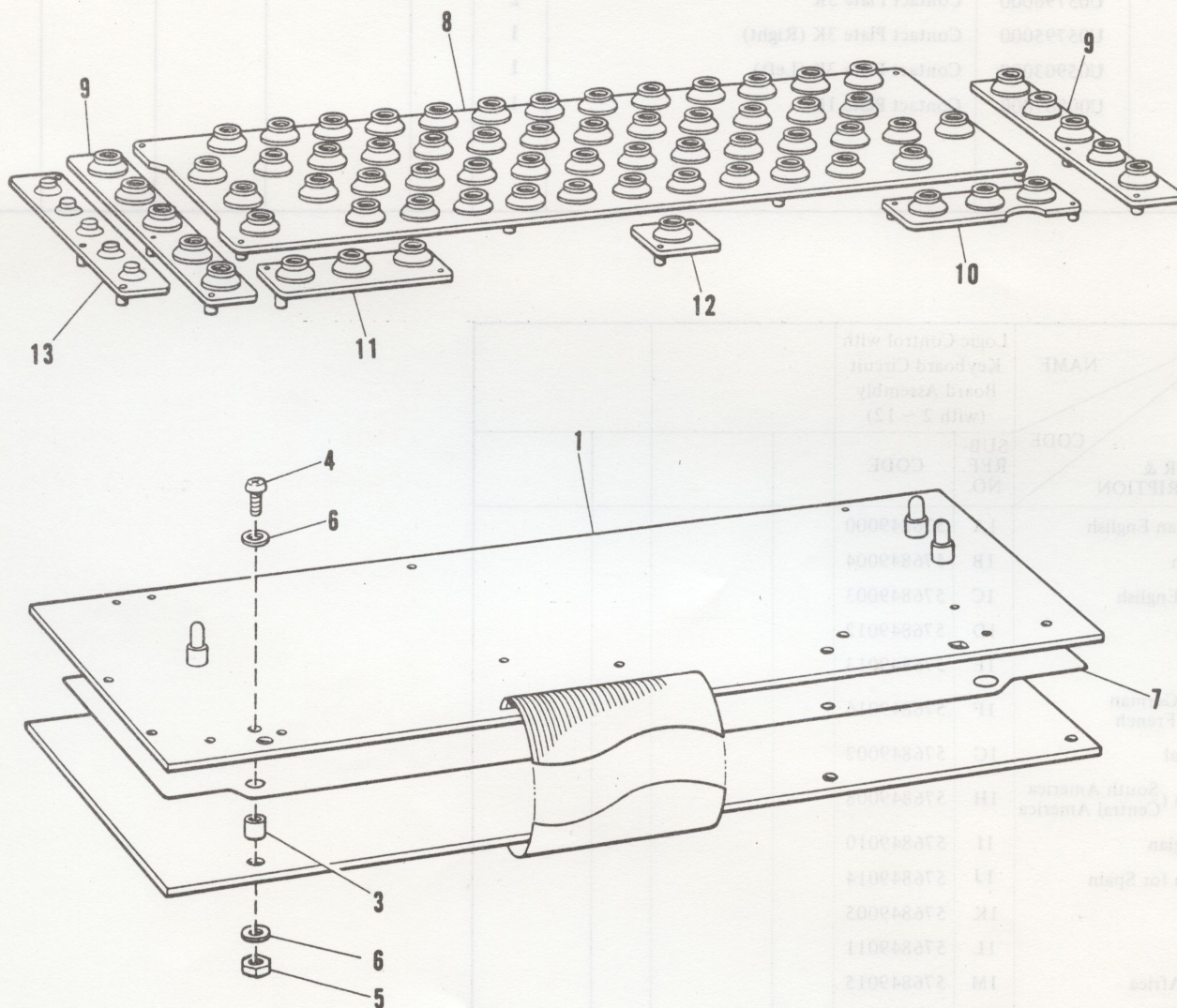
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-102

LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD (Memory 4K)

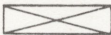
Model: EM-85

MAIN- REF. NO.	TD-102
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PARTS CODE & PARTS NAME

Model: EM-85

MAIN-REF. NO.	TD-102	Functional group name	LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Logic Control with Keyboard Circuit Board Assembly (with 3 ~ 13)	1					
3	U5798000	Circuit Board Spacer	2					
4	002301205	Screw for Spacer	2					
5	021300106	Nut for Screw	2					
6	025030133	Washer for Screw	4					
7	575940000	Insulator	1					
8	U05794000	Contact Plate 46K	1					
9	U05796000	Contact Plate 5K	2					
10	U05795000	Contact Plate 3K (Right)	1					
11	U05903000	Contact Plate 3K (Left)	1					
12	U00867000	Contact Plate 1K	1					
13	U06081000	Rubber Spring	1					

NAME COLOR & DESCRIPTION	CODE	Logic Control with Keyboard Circuit Board Assembly (with 3 ~ 13)					
		SUB-REF. NO.	CODE				
American English		1A	U71778000				
German		1B	U71778004				
King's English		1C	U71778003				
French		1D	U71778012				
Dutch		1E	U71778013				
Swiss (German French)		1F	U71778016				
Bilingual		1G	U71778002				
Spanish (South America Central America)		1H	U71778008				
Norwegian		1I	U71778010				
Spanish for Spain		1J	U71778014				
Italian		1K	U71778005				
Danish		1L	U71778011				
South Africa		1M	U71778015				
Swedish		1N	U71778018				
Finnish		1P	U71778019				
Portuguese		1Q	U71778020				
Latin & Greek		1R	U71778022				
Chili		1S	U71778009				
Turkish		1T	U71778025				
Cyprus		1U	U71778026				

Caution: To visualize the  part and ordering procedures, please refer to the Preface.

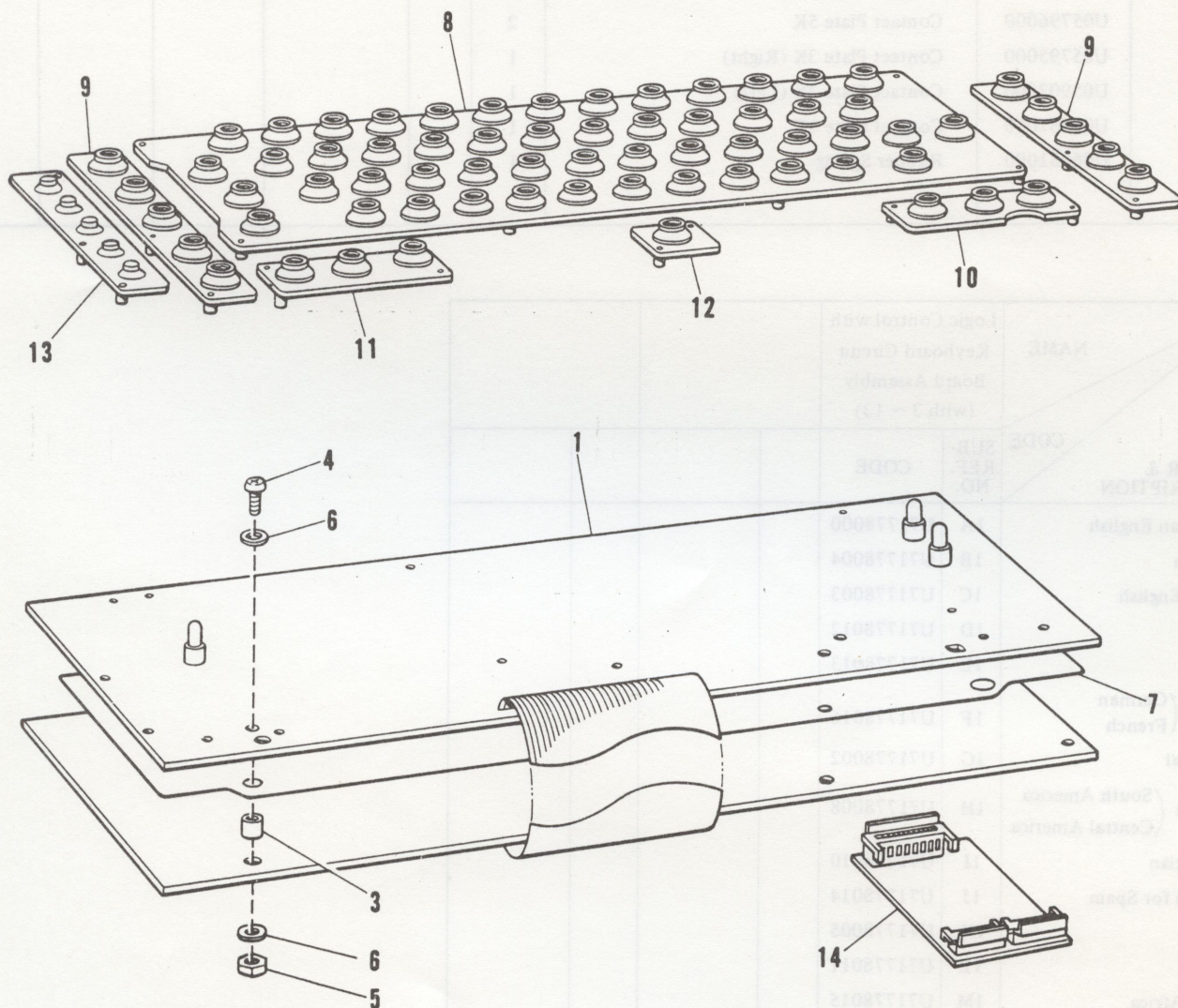
535-421-102

LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD (Memory 8K)

Model: EM-85

MAIN-
REF. NO.

TE-102



PARTS CODE & PARTS NAME

Model: EM-85

MAIN-REF. NO.	TE-102	Functional group name	LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Logic Control with Keyboard Circuit Board Assembly (with 3 ~ 14)	1					
3	U05798000	Circuit Board Spacer	2					
4	002301205	Screw for Spacer	2					
5	021300106	Nut for Screw	2					
6	025030133	Washer for Screw	2					
7	575940000	Insulator	1					
8	U05794000	Contact Plate 46K	1					
9	U05796000	Contact Plate 5K	2					
10	U05795000	Contact Plate 3K (Right)	1					
11	U05903000	Contact Plate 3K (Left)	1					
12	U00867000	Contact Plate 1K	1					
13	U06081000	Rubber Spring	1					
14	U71804001	RAM board 4K	1					

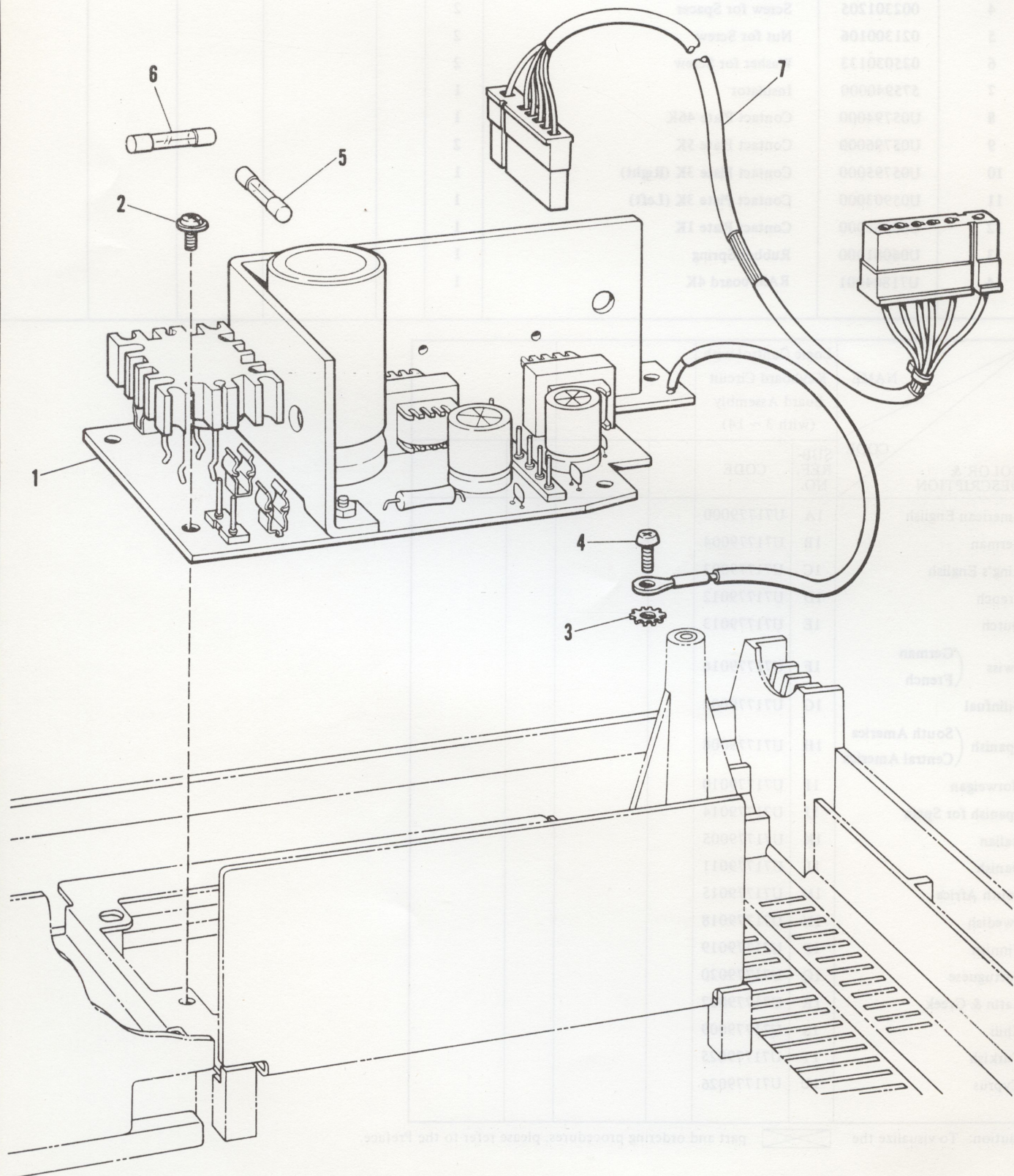
NAME	Logic Control with Keyboard Circuit Board Assembly (with 3 ~ 14)					
	CODE	SUB-REF. NO.	CODE			
COLOR & DESCRIPTION						
American English	1A	U71779000				
German	1B	U71779004				
King's English	1C	U71779003				
French	1D	U71779012				
Dutch	1E	U71779013				
Swiss (German)	1F	U71779016				
(French)						
Bilingual	1G	U71779002				
Spanish (South America)	1H	U71779008				
(Central America)						
Norwegian	1I	U71779010				
Spanish for Spain	1J	U71779014				
Italian	1K	U71779005				
Danish	1L	U71779011				
South Africa	1M	U71779015				
Swedish	1N	U71779018				
Finnish	1P	U71779019				
Portuguese	1Q	U71779020				
Latin & Greek	1R	U71779022				
Chili	1S	U71779009				
Turkish	1T	U71779025				
Cyprus	1U	U71779026				

Caution: To visualize the  part and ordering procedures, please refer to the Preface.

POWER SUPPLY CIRCUIT BOARD

Model: EM-80

MAIN- REF. NO.	TC-104
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-104	Functional group name	POWER SUPPLY CIRCUIT BOARD					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	576850001	Power Supply Circuit Board Assembly (with 5 ~ 6)	1					
2	571672001	Screw for P.S. Circuit Board Assembly	1					
3	502673001	Washer for Ground Wire	1					
4	002350606	Screw for Ground Wire	1					
5	U15325000	Glass Fuse 5A	1					
6	U15324000	Glass Fuse 2.5A	1					
7	U70212001	Power Supply Harness Unit	1					

PARTS CODE & PARTS NAME

Model: EM-85

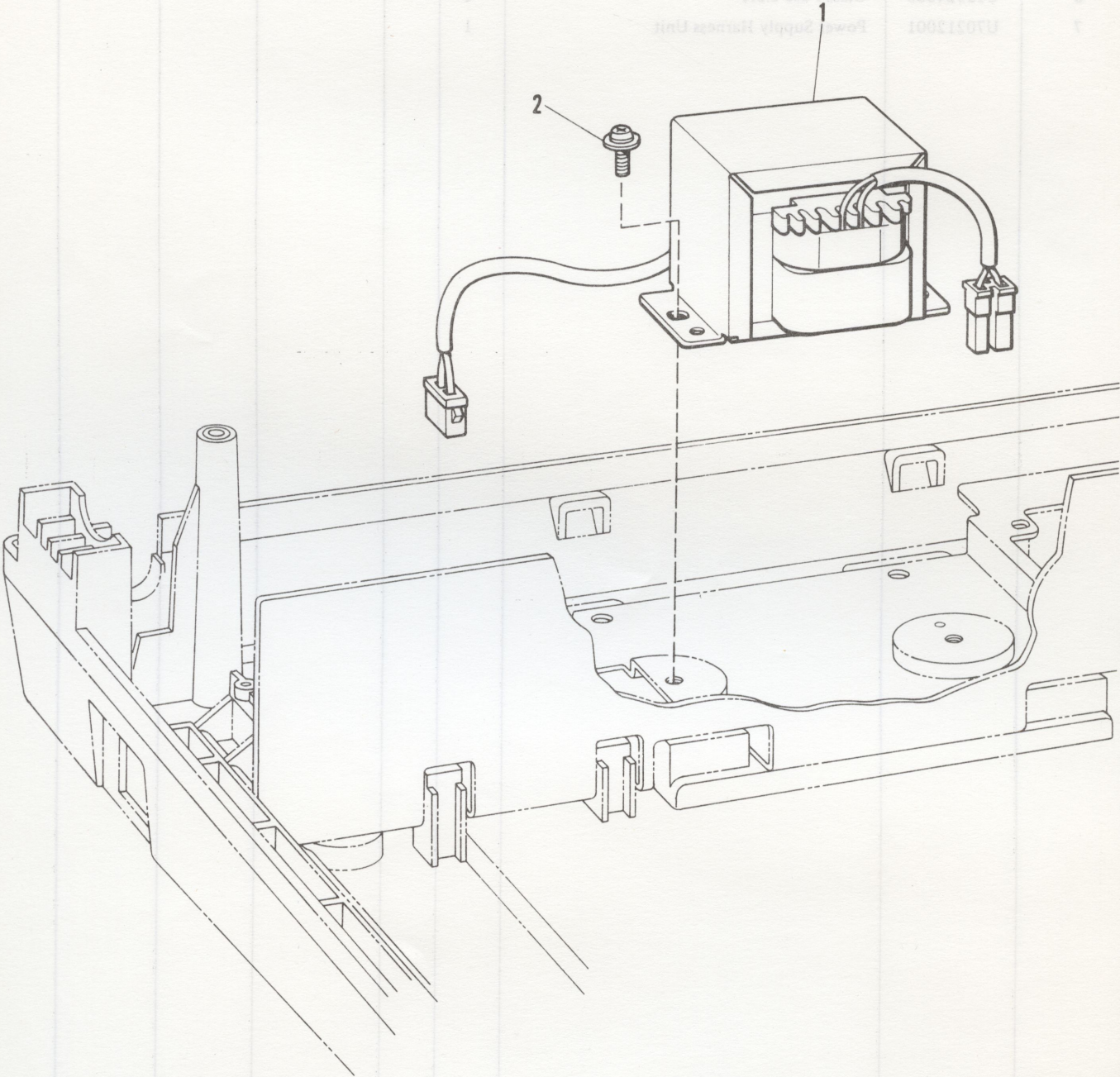
MAIN-REF. NO.	TD-104	Functional group name	POWER SUPPLY CIRCUIT BOARD						
			SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION
FROM	UP TO								
1	U71781001	Power Supply Circuit Board Assembly (with 5 ~ 6)	1						
2	571672001	Screw for P.S. Circuit Board Assembly	1						
3	502673001	Washer for Ground Wire	1						
4	002350606	Screw for Ground Wire	1						
5	U15325000	Glass Fuse 5A	1						
6	U15324000	Glass Fuse 2.5A	1						
7	U70212001	Power Supply Harness Unit	1						

POWER SUPPLY TRANSFORMER

Model: EM-80

MAIN- REF. NO.	TC-105
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MAIN REF. NO.	TD 104	FUNCTIONAL GROUP NAME	POWER SUPPLY CIRCUIT BOARD
SUB REF. NO.	CODE	NAME	QTY
1	U1781001	Power Supply Circuit Board Assembly (with 2 x 8)	1
2	21872001	Screw for P.S. Circuit Board Assembly	1
3	202873001	Washer for Ground Wire	1
4	003350000	Screw for Ground Wire	1
5	U13232000	Class Fuse 2A	1
6	U13234000	Class Fuse 1.5A	1
7	U70513001	Power Supply Harmonic Unit	1



PARTS CODE & PARTS NAME

Model:

MAIN-REF. NO.	TC-105	Functional group name	POWER SUPPLY TRANSFORMER					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Power Supply Transformer	1					
2	533777001	Screw for P.S. Transformer	2					

SPECIAL PARTS

COLOR & DESCRIPTION	NAME		Power Supply Transformer									
	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.
100V		1A	576800001									
115V		1B	576802001									
220V		1C	576805001									
240V		1D	576807001									
200V		1E	576804001									
110V		1F	576801001									

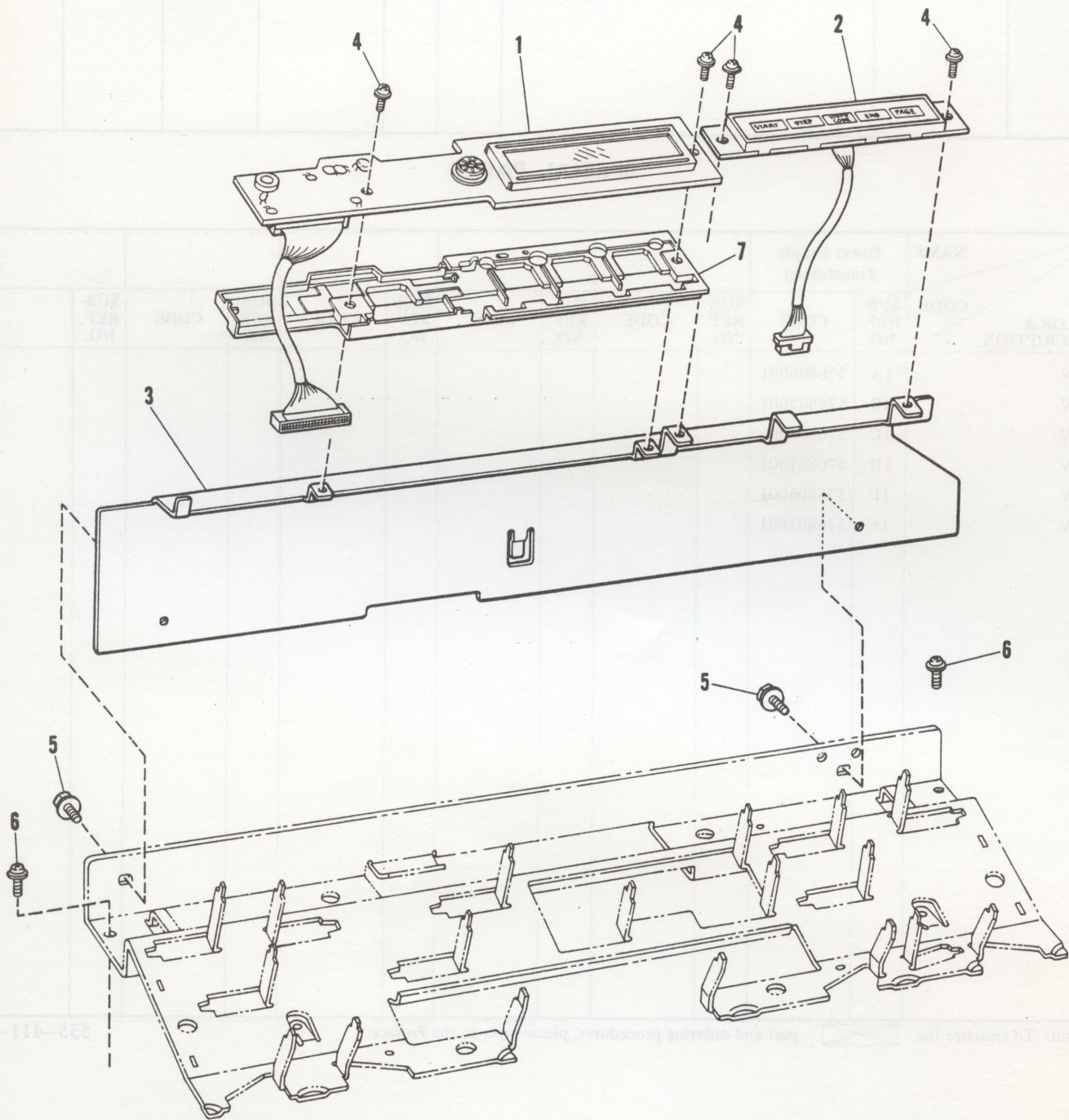
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-105

LCD CIRCUIT BOARD

Model: EM-85

MAIN- REF. NO.	TD-108
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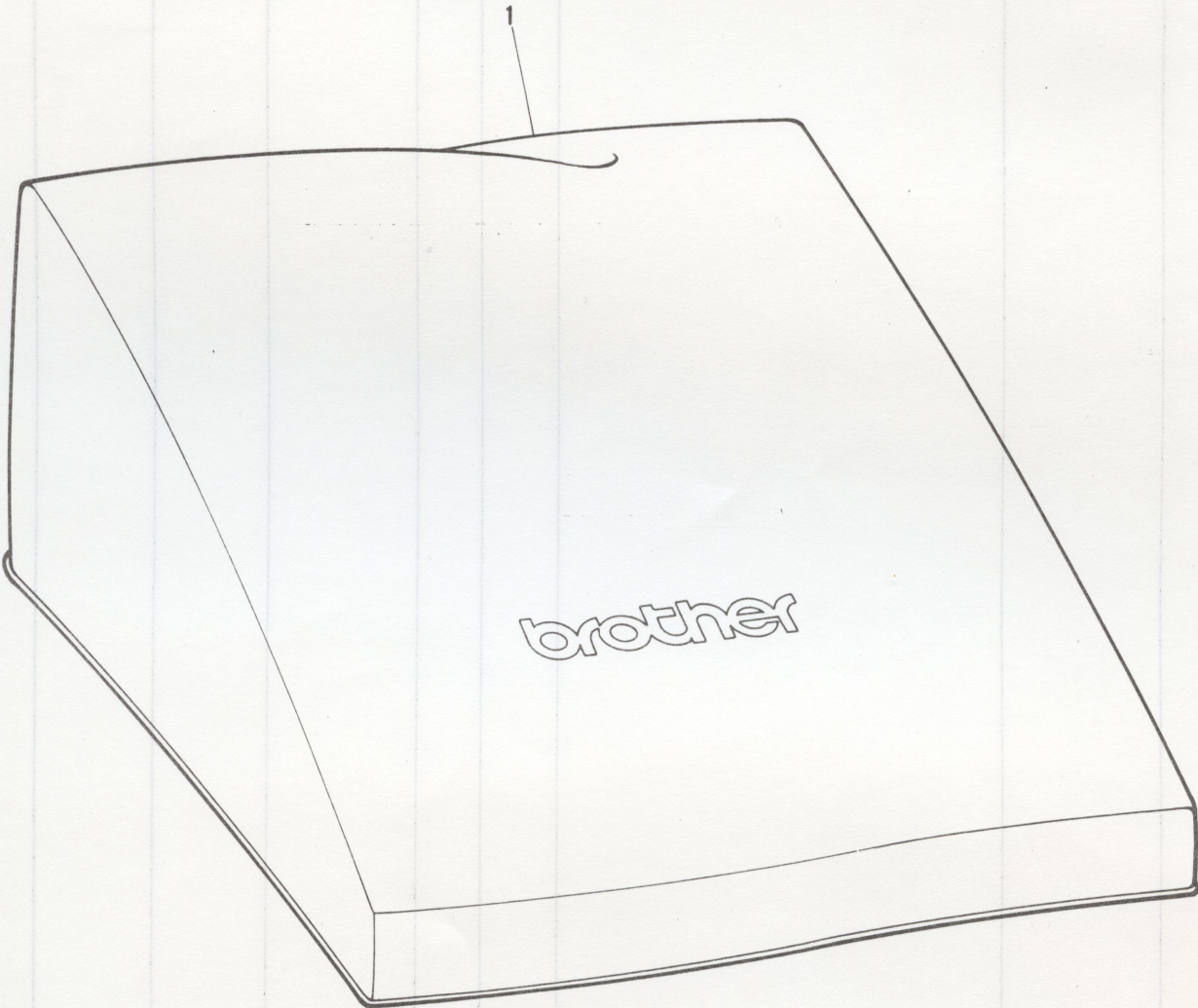
PARTS CODE & PARTS NAME

Model: EM-85

MAIN-REF. NO.	TD-108	Functional group name	LCD CIRCUIT BOARD							
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK		
						FROM	UP TO			
1	U71782001	LCD Circuit Board Assembly	1							
2	U71636001	Touch Panel Unit	1							
3	U71642000	LCD Board Holder	1							
4	U00480001	Screw for LCD Touch Panel	4							
5	U00986001	Screw for LCD Touch Panel	2							
6	220814001	Screw for Keyboard Set Holder	2							
7	U06074001	LCD Circuit Board Protector	1							

Model: EM-80

MAIN-REF. NO.		TC-910		LCD CIRCUIT BOARD		FUNCTIONAL GROUP NAME	TD 108	MAIN REF. NO.
MAIN-REF. NO.		TC-910		QTY	CP	NAME	CODE	SUB REF. NO.
				1		LCD Circuit Board Assembly	U7183001	1
				1		Touch Panel Unit	U7183001	2
				1		LCD Board Holder	U71842000	3
				4		Screw for LCD Touch Panel	U00480001	4
				2		Screw for LCD Touch Panel	U00986001	5
				2		Screw for Keyboard Set Holder	120814001	6
				1		LCD Circuit Board Protector	U06074001	7



PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-920	Functional group name	PRINTED MATTER					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Instruction Book	1					
2		Unpacking Instruction Sheet	1					

SPECIAL PARTS

NAME COLOR & DESCRIPTION	Instruction Book		Unpacking Instruction Sheet					
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE
ENGLISH (U.S.A. & CANADA only)	1A	593541011						
GERMANY	1B	593541012						
ENGLISH (others)	1C	593541013						
FRENCH	1D	593541014						
DUTCH	1E	593541015						
NORWEGIAN	1F	593541016						
SPANISH	1G	593541017						
FINNISH	1H	593541018						
ITALIAN	1I	593541019						
SWEDISH	1J	593541020						
DANISH	1K	593541021						
			2A	593541080				

Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-920

PRINTED MATTER

Model: EM-85

MAIN-REF. NO.	TD-920	PRINTED MATTER		NAME	QTY	CP	NEW CODE	REF. NO.	SUB. REF. NO.	TC-920	MAIN. REF. NO.
				Instruction Book	1						
				Unpacking Instruction Sheet	1						
1. INSTRUCTION MANUAL											
2. ① ② ③											

DESCRIPTION	CODE	REF. NO.	SUB. REF. NO.	CODE	REF. NO.	SUB. REF. NO.	CODE	REF. NO.	SUB. REF. NO.
DANISH		1K	203241031						
SWEDISH		1J	203241030						
ITALIAN		1I	203241029						
FINNISH		1H	203241028						
SPANISH		1G	203241017						
NORWEGIAN		1F	203241018						
DUTCH		1E	203241012						
FRENCH		1D	203241014						
ENGLISH (British)		1C	203241013						
GERMANY		1B	203241012						
CANADA (only)		1A	203241011						
ENGLISH (U.S.A.)									

535-421-920

PARTS CODE & PARTS NAME

Model: EM-85

MAIN-REF. NO.	TD-920	Functional group name	PRINTED MATTER					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Instruction Book	1					
2		Unpacking Instruction Sheet	1					

SPECIAL PARTS

NAME	Instruction Book		Unpacking Instruction Sheet					
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE
COLOR & DESCRIPTION								
ENGLISH (U.S.A. & CANADA only)	1A	593542011						
German	1B	593542012						
English (Others)	1C	593542013						
French	1D	593542014						
Dutch	1E	593542015						
Swiss (German)	1L	593542022						
Siwss (French)	1M	593542023						
Norwegian	1F	593542016						
Spanish	1G	593542017						
Finnish	1H	593542018						
Italian	1I	593542019						
Swedish	1J	593542020						
Danish	1K	593542021						
English (Australia only)	1L	593542024	2A	U70220001				

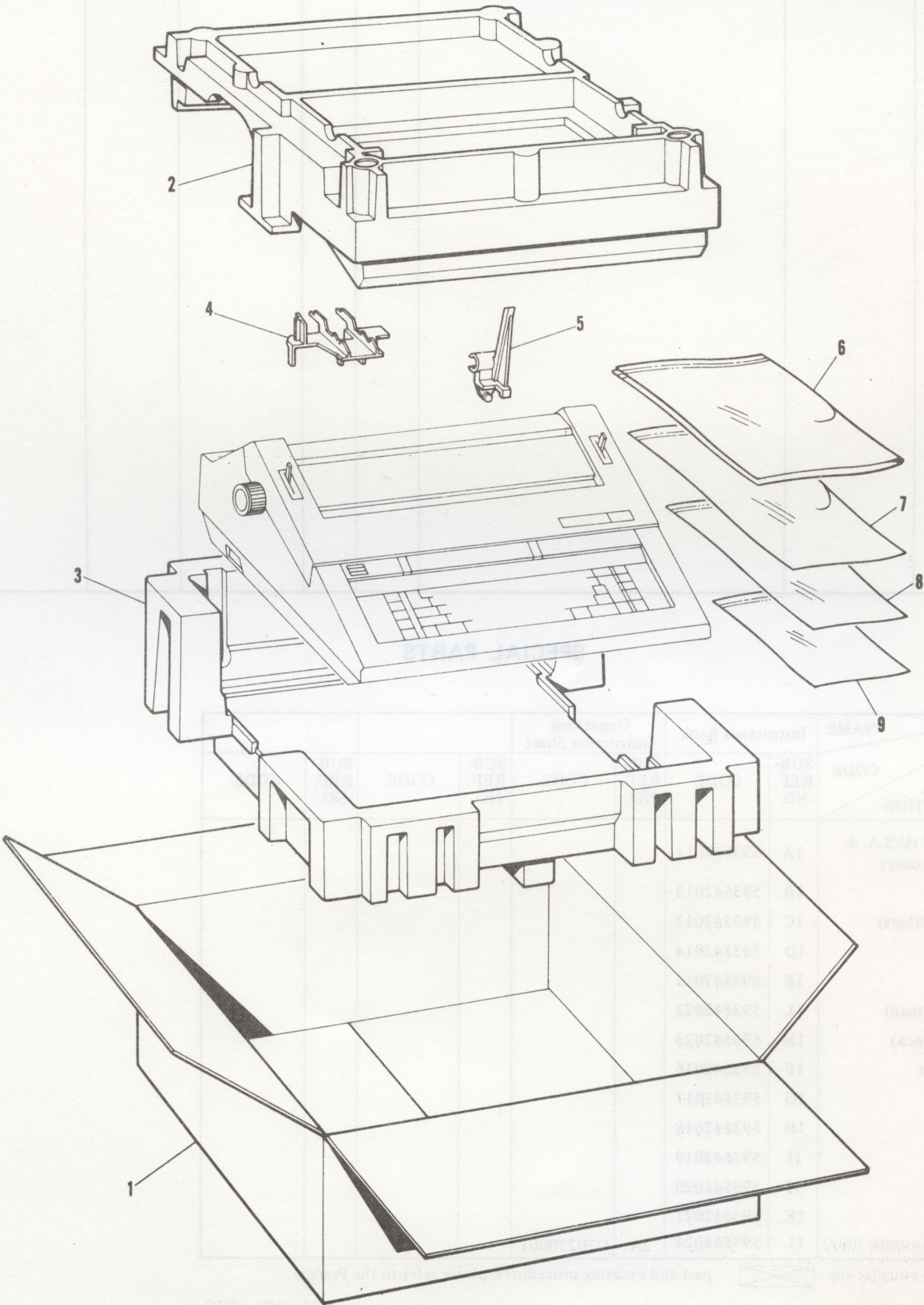
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-421-920

PACKING MATERIAL

Model: EM-80

MAIN- REF. NO.	TC-930
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WARTUNGSANLEITUNG

MODELL : EM-80, EM-85

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1-2 Anschlaghammer-Magnetspule

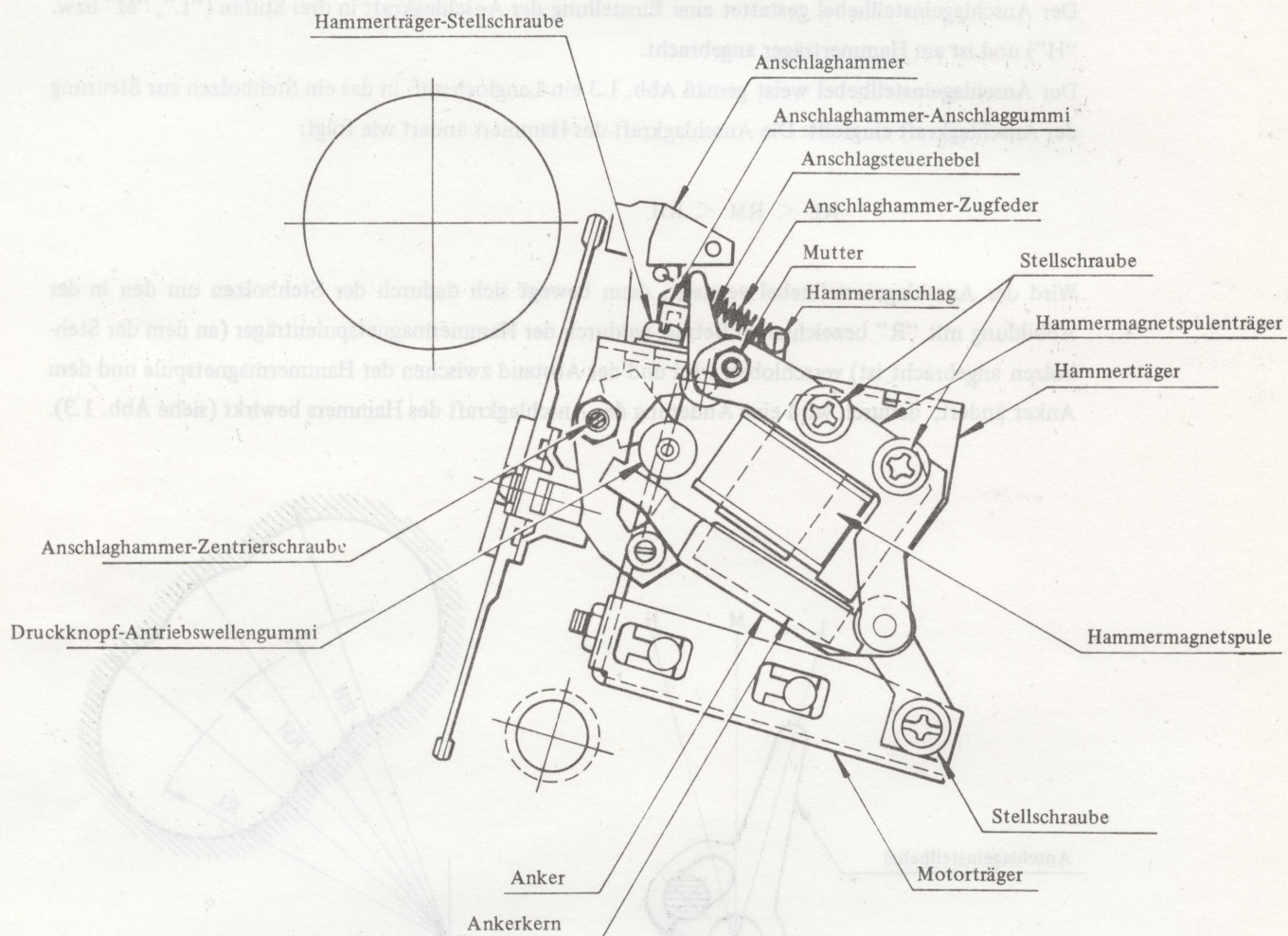


Abb. 1-2

Der Anschlaghammer ist am Hammerträger mit der Anschlaghammer-Zentrierschraube befestigt. Wenn die Hammermagnetspule erregt wird, wird der Anker angezogen und der Hammer wird über den Hammerantriebsgummiring angetrieben. Der Hammer befindet sich in seiner Ausgangsstellung, wenn er den Hammeranschlaggummi berührt. Der Hammer wird immer von der Hammerfeder zurückgezogen.

Die Anschlagkraft des Hammers ist in zwei Stufen einstellbar, abhängig von der Schriftart; die Steuerung der Anschlagkraft erfolgt über die Hammermagnetspule. Die maßstäblichen Zusammenhänge zwischen dem Hammer und dem Anker sowie dem Anker und der Hammermagnetspule sind in Abb. 1.2 dargestellt.

1-3 Anschlagstellhebel (nur Modell EM-80)

Der Anschlagstellhebel gestattet eine Einstellung der Anschlagkraft in drei Stufen ("L", "M" bzw. "H") und ist am Hammerträger angebracht.

Der Anschlagstellhebel weist gemäß Abb. 1.3 ein Langloch auf, in das ein Stehbolzen zur Steuerung der Anschlagkraft eingreift. Die Anschlagkraft des Hammers ändert wie folgt:

$$R_L < R_M < R_H$$

Wird der Anschlagstellhebel verstellt, dann bewegt sich dadurch der Stehbolzen um den in der Abbildung mit "R" bezeichneten Betrag, wodurch der Hammermagnetspulenträger (an dem der Stehbolzen angebracht ist) verschoben wird und der Abstand zwischen der Hammermagnetspule und dem Anker ändert; dadurch wird eine Änderung der Anschlagkraft des Hammers bewirkt (siehe Abb. 1.3).

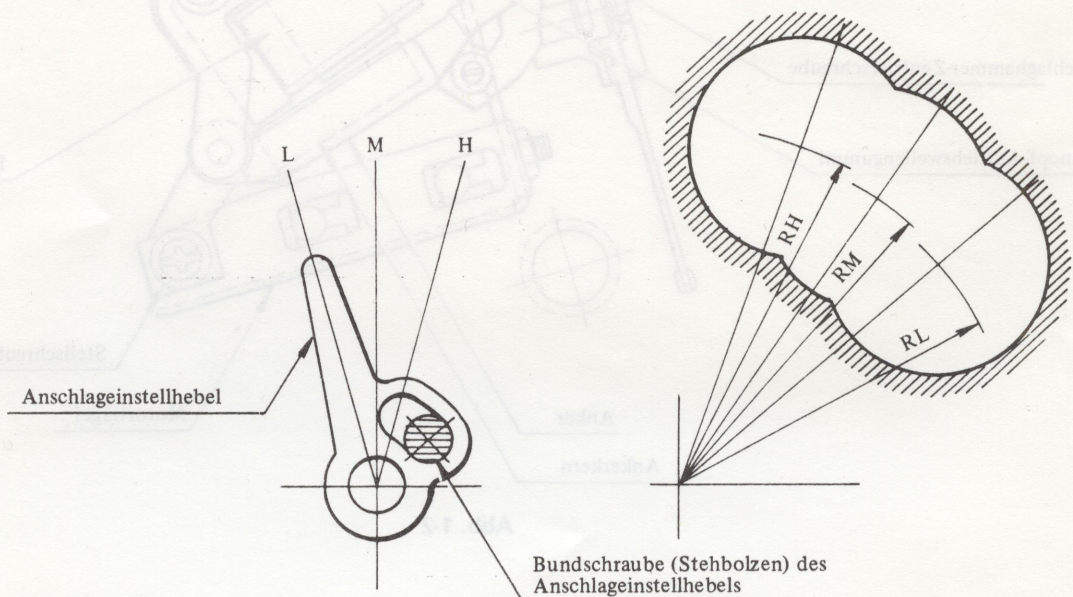


Abb. 1-3

Hinweis: Da die Anschlagstärke von Modell EM-85 elektronisch gesteuert wird, entfällt die Einstellung mittels Anschlagregulierhebel.

Einzelheiten sind der Beschreibung der Elektronik in der Wartungsanleitung zu entnehmen.

(3) Druckkopf-Indikator

Es ist zu überprüfen, daß die Druckkopf-Indikator-LED genau mit dem Maßstab ausgerichtet ist.
(Einzelheiten sind der Beschreibung des Druckkopf-Indikators in Abschnitt 4.19 zu entnehmen.)

(4) Deckelschalter

Die Funktion des Deckelschalters ist zu überprüfen.

(Einzelheiten sind der Beschreibung des Deckelschalters in Abschnitt 4.11 zu entnehmen.)

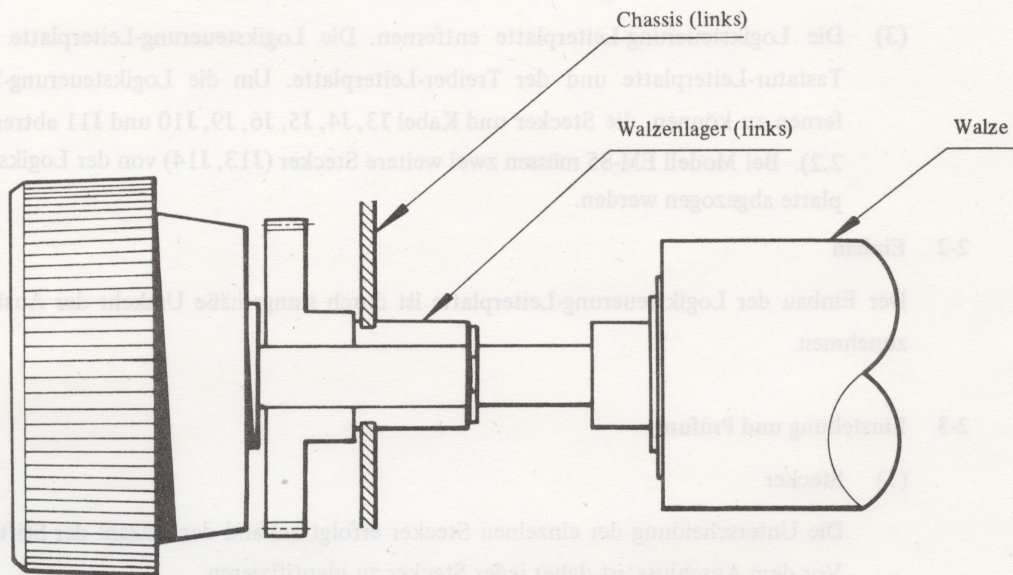


Abb. 1-2

2. Tastatur und Logiksteuerung-Leiterplatte

2-1 Ausbau

- (1) Die obere Adeckung ausbauen.
- (2) Die Tastatur entfernen. Dazu diese aus der Bodenplatte herausziehen.
Zuerst den Stecker des Tastatur-Wahlschalters von der Logiksteuerungs-Leiterplatte abziehen. Danach das Erdungskabel und die Tastatureinheit vom unteren Gehäuse abnehmen. Die Tastatureinheit kann gemeinsam mit den linken und rechten Tastatur-Halterungen abgenommen werden: daher die Tastatur-Halterungen hochziehen, um die Tastatureinheit zu entfernen (Abb. 2-1.).
- (3) Die Logiksteuerung-Leiterplatte entfernen. Die Logiksteuerung-Leiterplatte besteht aus der Tastatur-Leiterplatte und der Treiber-Leiterplatte. Um die Logiksteuerung-Leiterplatte entfernen zu können, die Stecker und Kabel J3, J4, J5, J6, J9, J10 und J11 abtrennen (siehe Abb. 2.2). Bei Modell EM-85 müssen zwei weitere Stecker (J13, J14) von der Logiksteuerungs-Leiterplatte abgezogen werden.

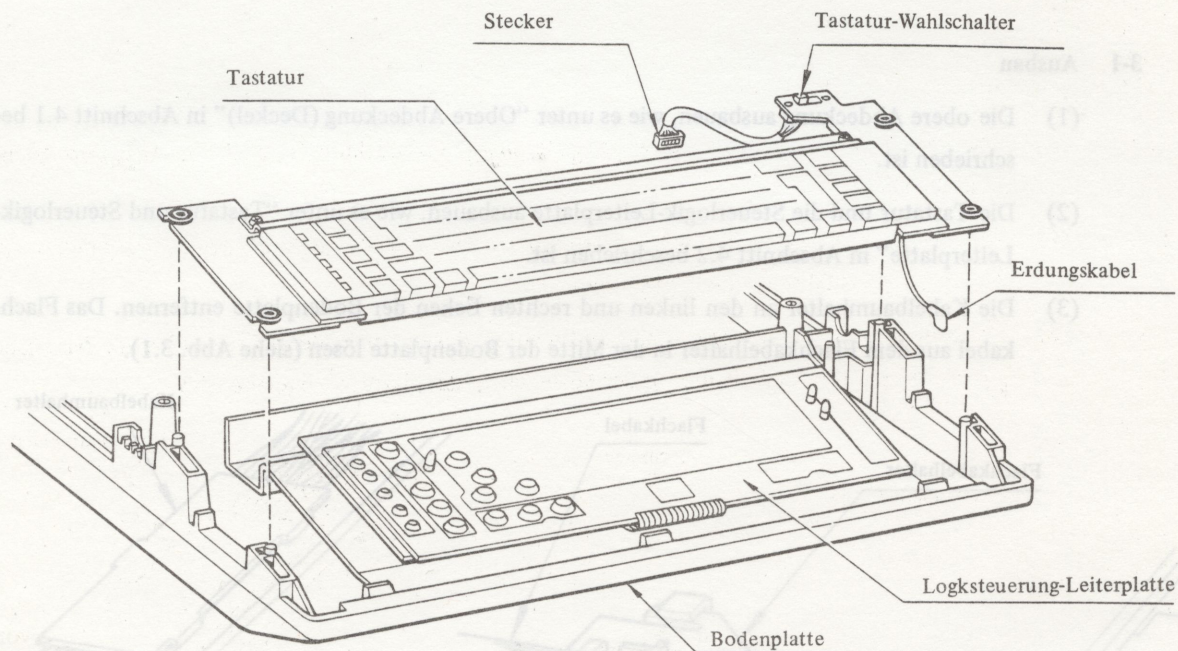
2-2 Einbau

Der Einbau der Logiksteuerung-Leiterplatte ist durch sinngemäße Umkehr der Ausbauvorgänge vorzunehmen.

2-3 Einstellung und Prüfung

(1) Stecker

Die Unterscheidung der einzelnen Stecker erfolgt anhand der Anzahl der Stifte und der Farbe. Vor dem Anschluss ist daher jeder Stecker zu identifizieren.



(EM-80)

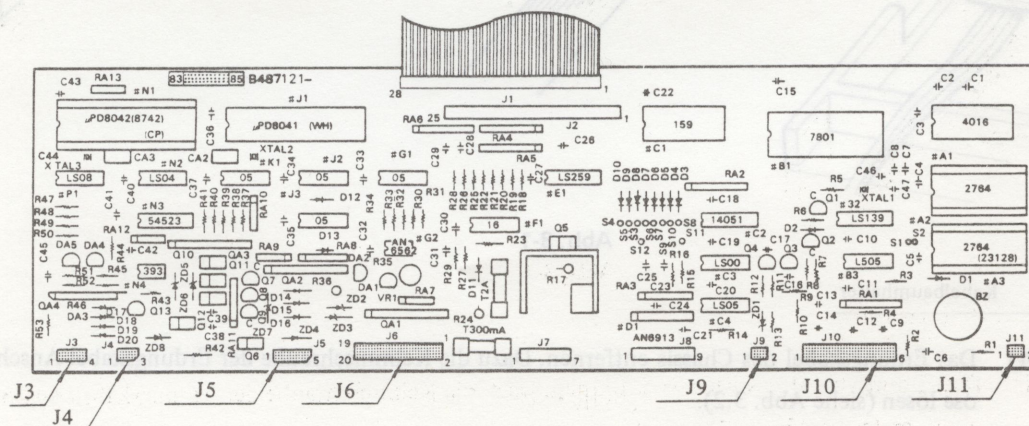
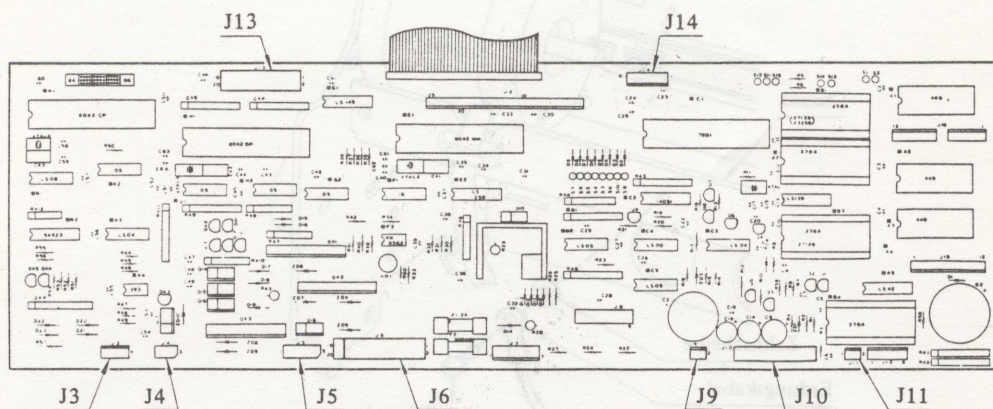


Fig. 2-2

(EM-85)



3. Chassis

3-1 Ausbau

- (1) Die obere Abdeckung ausbauen, wie es unter "Obere Abdeckung (Deckel)" in Abschnitt 4.1 beschrieben ist.
- (2) Die Tastatur und die Steuerlogik-Leiterplatte ausbauen, wie es unter "Tastatur und Steuerlogik-Leiterplatte" in Abschnitt 4.2 beschrieben ist.
- (3) Die Kabelbaumhalter an den linken und rechten Ecken der Bodenplatte entfernen. Das Flachkabel aus dem Flachkabelhalter in der Mitte der Bodenplatte lösen (siehe Abb. 3.1).

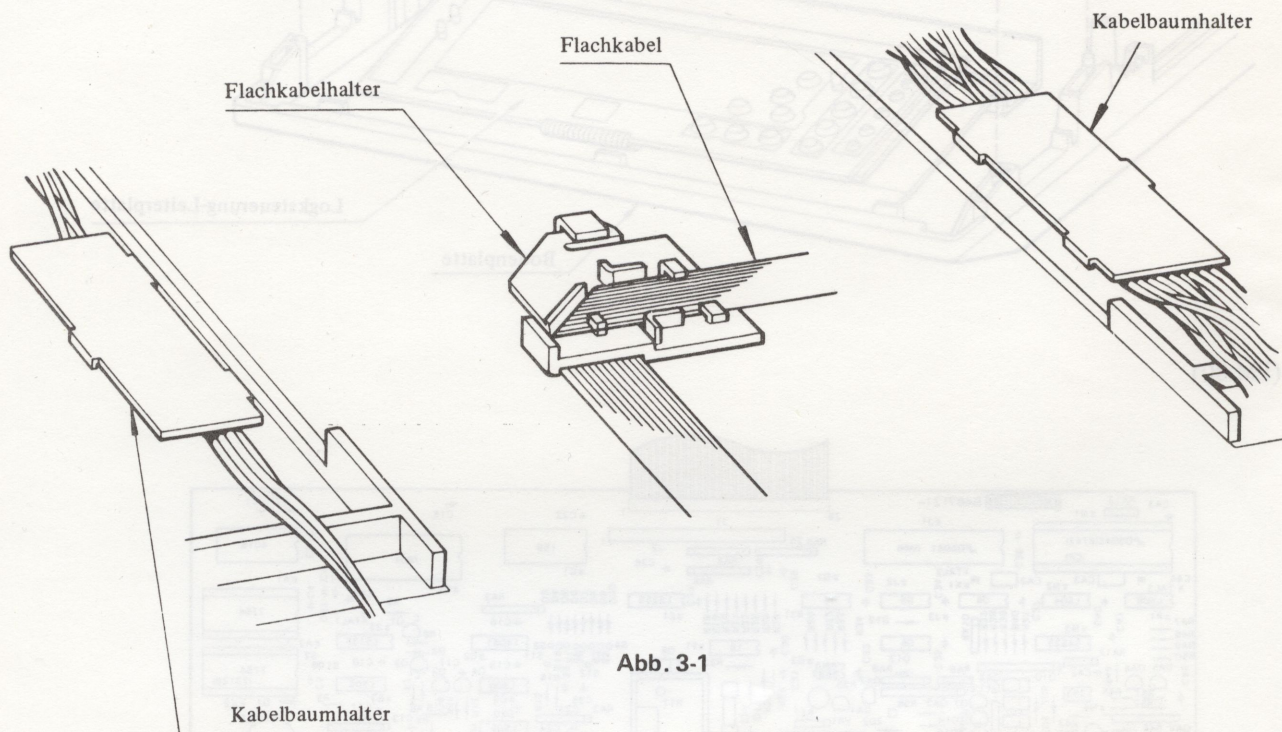


Abb. 3-1

- (4) Das Erdungskabel des Chassis entfernen. Dazu die Klemmschraube der Erdungskabel-Anschluß-ose lösen (siehe Abb. 3.2).

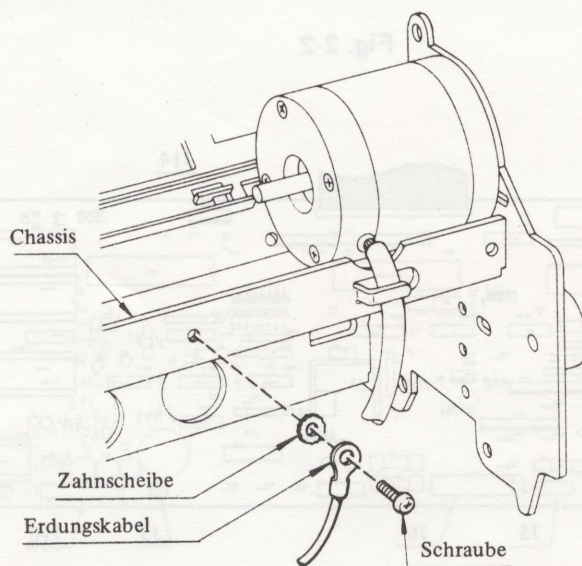


Abb. 3-2

15-3 Einstellung und Prüfung

(1) Einstellung der Ausgangsstellung des Farbbandmotors und der Nockenscheibe

Für diese Einstellung ist das Spezialprüfgerät (CH-60) zu verwenden.

Die Ausgangsstellung der Farbbandmotorwelle wird vom Farbbandmotordetektor festgestellt: der Stellantrieb für die Farbbandheber-Ausgangsstellung ist an der Farbbandmotorwelle montiert. Die Ausgangsstellung des Farbbandmotors entspricht der Ausgangsstellung des Farbbandheber-Nockenrades und auch der Ausgangsstellung des Farbbandhebers (Farbband abgesenkt).

1. Das Prüfgerät an die folgenden Stecker ((a) ~ (c)) anschließen.

- (a) Stecker des Farbbandmotordetektors
- (b) Stecker des Farbbandmotors
- (c) Stecker des Netzkabels

- #### 2. Den MOTOR SELECT Schalter des Prüfgerätes auf Position "RB" stellen und die Schreibmaschine einschalten. Der Farbbandmotor beginnt sich zu drehen und bleibt dann mit der Welle in der Ausgangsstellung stehen. Die Stellschraube und die Mutter des Stellantriebes für die Farbbandheber-Ausgangsstellung lösen und den Stellantrieb verschieben, um die Farbbandheber-Ausgangsstellung auf die Mitte des Schlitzes der Farbbandmotordetektors einzustellen, wenn sich die Motorwelle in der oben beschriebenen Position befindet. Sicherstellen, daß C, D und die Senorlampen von CH60 eingeschaltet sind (Status ⑤). (Abb. 15.2)

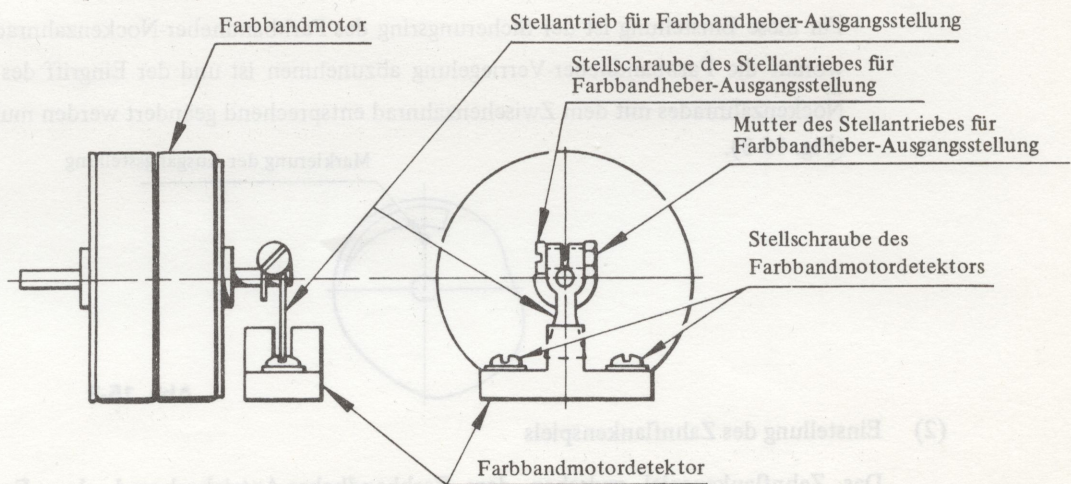


Abb. 15-2

- #### 3. Durch dreimaliges Drücken des ← Schalters ist auf die Erregung der A-Phase zu schalten (A-Lampe leuchtet), wobei darauf zu achten ist, daß der Indexdetektor eingeschaltet bleibt (SENSOR-Lampe leuchtet). Falls der Indexdetektor abgeschaltet ist, die RESET Taste drücken und auf den Status ⑤ zurückkehren, worauf die Position des Stellantriebes einzustellen ist.

4. Die RESET Taste drücken, um auf den Status ⑤ zurückzukehren.
 Danach durch dreimaliges Drücken des → Schalters auf die Erregung der B-Phase schalten (B-Lampe leuchtet), wobei darauf zu achten ist, daß der Indexdetektor eingeschaltet bleibt (SENSOR-Lampe leuchtet). Falls der Indexdetektor abgeschaltet ist, auf Status ⑤ zurückkehren und die Position des Stellantriebes einstellen.
 Die Einstellung der Ausgangsposition ist beendet, wenn die Bedingungen ⑧ und ⑩ erfüllt sind.

Bedingung	Schalter	Lampenanzeige				
		D	C	B	A	SENSOR
⑤	—	●	●	○	○	●
⑧	←	●	○	○	○	●
	←	●	○	○	●	●
	←	○	○	○	●	●
⑨	—	●	●	○	○	●
⑩	→	○	●	○	○	●
	→	○	●	●	○	●
	→	○	○	●	○	●

● ON Eingeschaltet ○ OUT Ausgeschaltet

Es ist darauf zu achten, daß die Markierung der Ausgangsstellung am Farbbandheber-Nocken-zahnrad genau über der Mitte der Farbbandheber-Nocken-zahnradwelle angeordnet sein muß, wenn sich der Farbbandmotor in seiner Ausgangsstellung befindet (nachdem der Farbbandmotor eingeschaltet und mit der Welle in der Ausgangsstellung gestoppt wurde).

Für diese Einstellung ist der Sicherungsring des Farbbandheber-Nocken-zahnrades zu entfernen, worauf die Farbbandheber-Verriegelung abzunehmen ist und der Eingriff des Farbbandheber-Nocken-zahnrades mit dem Zwischenzahnrad entsprechend geändert werden muß.
 (Fig. 15-3).

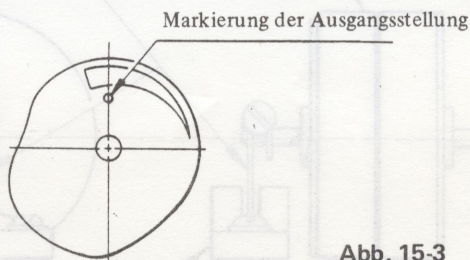


Abb. 15-3

(2) Einstellung des Zahnflankenspiels

Das Zahnflankenspiel zwischen dem Farbbandheber-Antriebzahnrad, dem Farbbandheber-Zwischenrad und dem Farbbandheber-Nocken-zahnrad ist auf 0,5 ~ 0,2 mm einzustellen, indem die Position des Farbbandheber-Zwischenzahnades geändert wird (siehe Abb. 15.4).

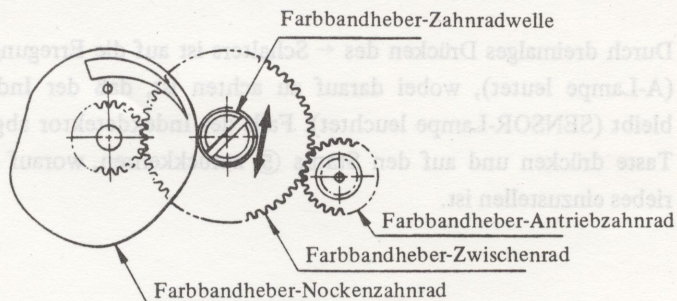


Abb. 15-4

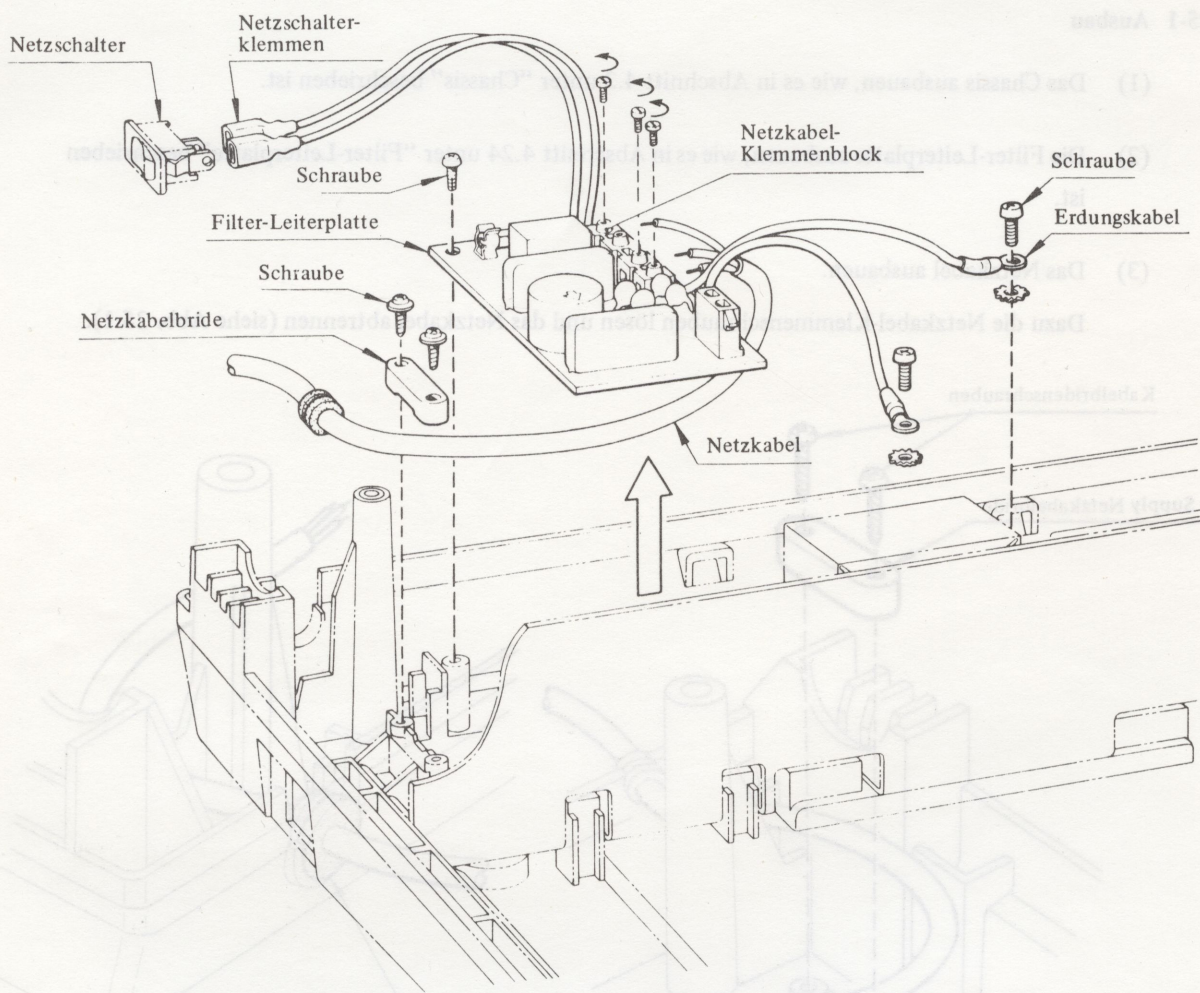


Abb. 24-1

25. Netzkabel

25-1 Ausbau

- (1) Das Chassis ausbauen, wie es in Abschnitt 4.3 unter "Chassis" beschrieben ist.
 - (2) Die Filter-Leiterplatte ausbauen, wie es in Abschnitt 4.24 unter "Filter-Leiterplatte" beschrieben ist.
 - (3) Das Netzkabel ausbauen.
- Dazu die Netzkabel-Klemmschrauben lösen und das Netzkabel abtrennen (siehe Abb. 25.1).

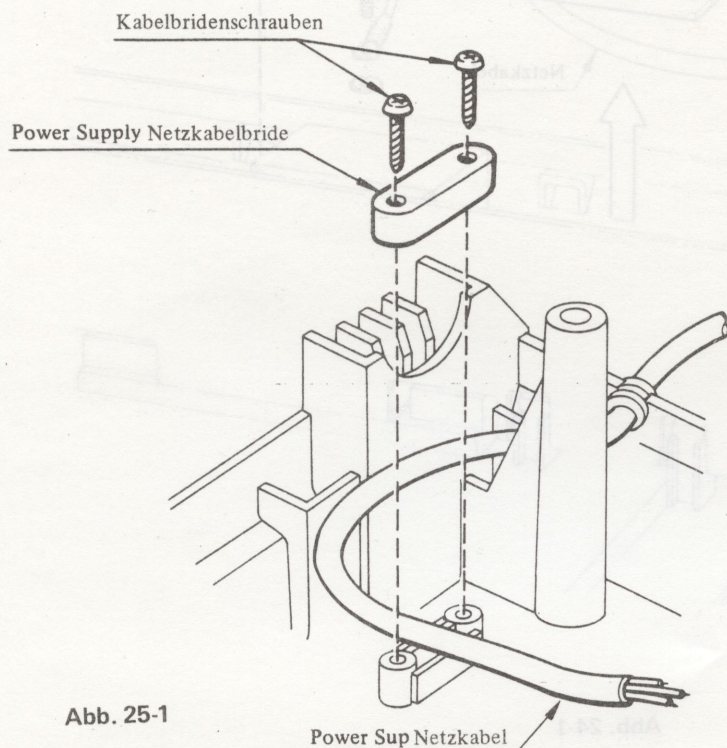


Abb. 25-1

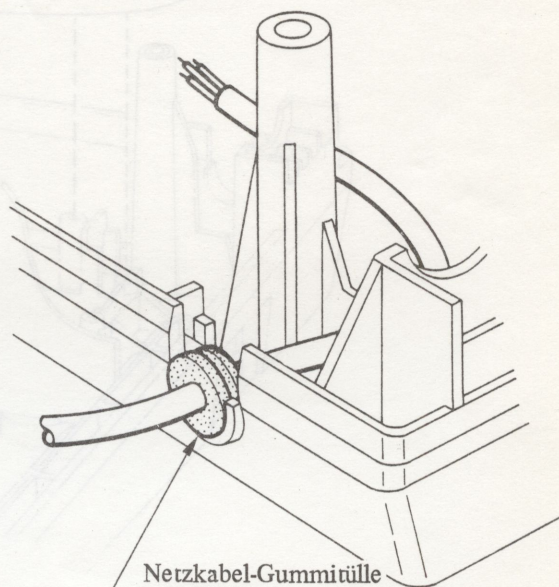


Abb. 25-2

25-2 Einbau

Den Einbau des Netzkabels durch sinngemäße Umkehr der Ausbauvorgänge vornehmen.

25-3 Einstellung und Prüfung

- (1) Gummitülle

Es ist sicherzustellen, daß die Gummitülle für das Netzkabel richtig in die Bodenplatte eingesetzt ist (siehe Abb. 25.2).

26. Flüssigkristallanzeigen-Leiterplatte und Berührungssensoreinheit

26-1 Ausbau der Flüssigkristallanzeigen-Leiterplatte

- (1) Die obere Abdeckung entfernen.

Siehe Anschnitt 1 "Obere Abdeckung".

- (2) Den Stecker abziehen.

Den Stecker (J1) der Flüssigkristallanzeigen-Leiterplatte von der Logiksteuerungs-Leiterplatte abziehen.

- (3) Zwei Schrauben der Flüssigkristallanzeigen-Leiterplatte entfernen und die Flüssigkristallanzeigen-Leiterplatte vom Leiterplattenhalter abziehen.

(Siehe Abb. 26-1)

26-2 Einbau

Die Flüssigkristallanzeigen-Leiterplatte durch sinngemäße Umkehr der Ausbauvorgänge wieder einbauen.

26-3 Ausbau der Berührungssensoreinheit

- (1) Die obere Abdeckung entfernen.

Siehe Abschnitt 1 "Obere Abdeckung".

- (2) Den Stecker abziehen.

Den Stecker (J14) der Berührungssensoreinheit von der Logiksteuerungs-Leiterplatte abziehen.

- (3) Die beiden Schrauben der Berührungssensoreinheit entfernen und die Berührungssensoreinheit vom Flüssigkristallanzeigen-Leiterplattenhalter abziehen.

(Siehe Abb. 26-1)

26-4 Einbau

Die Berührungssensoreinheit durch sinngemäße Umkehr der Ausbauvorgänge einbauen.

26-5 Einstellung und Prüfung

Nach dem Einbau der oberen Abdeckung, die Position der Flüssigkristallanzeigen-Leiterplatte kontrollieren. Der Lautstärkeregler muß sich in der Mitte der runden Bohrung der Flüssigkristallanzeigen-Abdeckung befinden.

Ist dieser nicht in der Mitte der Bohrung angeordnet, die beiden Schrauben des Flüssigkristallanzeigen-Leiterplattenhalters lösen und den Leiterplattenhalter entsprechend einstellen, danach die Schrauben wieder festziehen.

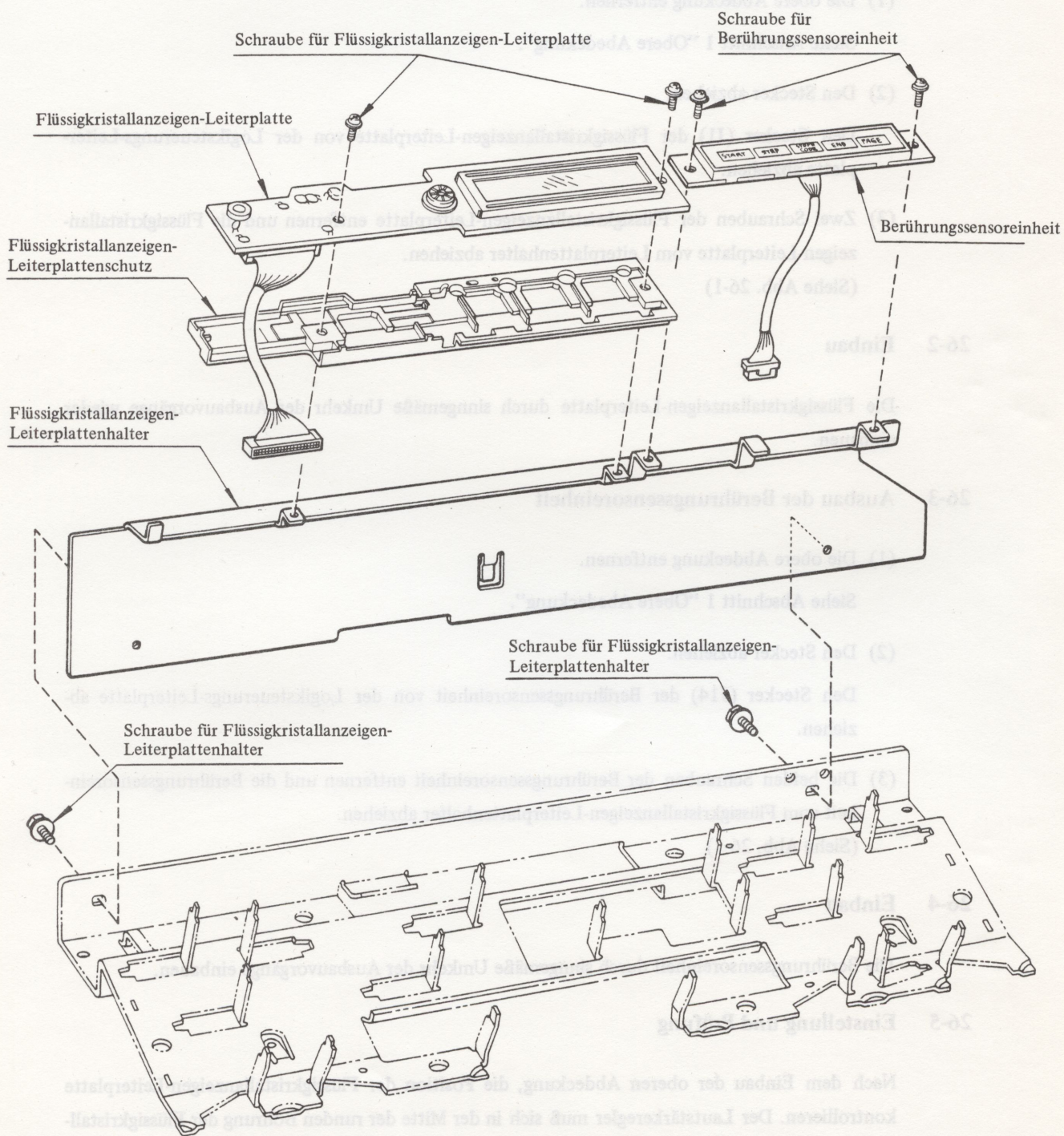


Fig. 26-1

Nr.	Schmiergut	Schmiermittel	Häufigkeit	
			täglich	bei Teilenumtausch
1	Wasserpumpe (links/rechts)	UNIWAY Öl	—	○
2	Papierverschubrollen (vorne/hinten)	EPINOC Fett	—	○
3	Wasserpumpe	EPINOC Fett	—	○
4	Nockenwelle (Nockenstift)	EPINOC Fett	—	○
5	Papierverschubrollen	EPINOC Fett	—	○
6	Papierhalter-Antischockwelle	EPINOC Fett	—	○
7	Zellenverschub-Zwischenstange	UNIWAY Öl	—	○
8	Wagenstellhebel	EPINOC Fett	—	○
9	Wagenführungsstange, Chassis	UNIWAY Öl Silikonfett	—	○
10	Farbbandverschubstange-Gemisch	Silikonfett	—	○
11	Druckhammer	UNIWAY Öl	—	○
12	Druckkopfstange Motorstange	Fett B EPINOC Fett	—	○
13	Farbbandhebel	Silikonfett EPINOC Fett	—	○
14	Antischockhebel Wagenmotor	Silikonfett	—	○

Kapitel 5 SCHMIERUNG

Nr.	Schmierpunkt	Schmiermittel	Häufigkeit	
			Jährlich	Bei Teileaustausch
1	Walzenlager (links/rechts)	UNIWAY öl	—	○
2	Papiervorschubrollen (vorne/hinten)	EPINOC Fett	—	○
3	Walzenknopffeder	EPINOC Fett	—	○
4	Nockenwelle (Nockennut)	EPINOC Fett	—	○
5	Papierlösenhebel	EPINOC Fett	—	○
6	Papierhalter-Antriebhebelwelle	EPINOC Fett	—	○
7	Zeilenvorschub-Zwischenzahnrad	UNIWAY öl	—	○
8	Wageneinstellhebel	EPINOC Fett	—	○
9	Wagenführungswelle, Chassis	UNIWAY öl Silikonfett	—	○
10	Farbbandvorschubgetriebe-Grundplatte	Silikonfett	—	○
11	Druckhammer	Fett B EPINOC Fett UNIWAY öl	—	○
12	Druckkopfträger Motorträger	Fett B EPINOC Fett	—	○
13	Farbbandheber	Silikonfett EPINOC Fett	—	○
14	Antriebseilscheibe Wagenmotor	Silikonfett	—	○

PARTS REFERENCE LIST

— CONTENTS —
— PREFACE —

This Parts List (MECHANICAL PORTION) pertains to the "Electronic Office Typewriter JP-15X" and the data of each models in reference to the Supply Parts which have been accumulated since the data (Jan. 1984).

In order to accomplish the After-Service most efficiently, it is most essential to sufficiently grasp the general explanation of Parts Reference List (MECHANICAL PORTION & ELECTRIC PORTION) usage and the ordering Procedures described on each items.

4	PARTS REPLACEMENT (DESIGN CHANGED PARTS)	(5)
5	ORDERING PROCEDURES	(5) - (7)
a)	Ordering procedures of Common Parts	(5)
b)	Ordering procedures of Color Parts	(5)
c)	Ordering procedures of Parts for Different Territories	(7)
d)	Ordering procedures of Electrical Parts	(7)

— CONTENTS —

GENERAL EXPLANATION

1. VIEWPOINT OF PARTS REFERENCE LIST AND COMPOSING UNITS (3)

2. REFERENCE NUMBERS (3)

3. DETAIL INDICATION OF PARTS CODE AND PARTS NAME (4)

4. PARTS REPLACEMENT (DESIGN CHANGED PARTS) (5)

5. ORDERING PROCEDURES (6) ~ (7)

 a) Ordering procedures of Common Parts (6)

 b) Ordering procedures of  Color Parts (6)

 c) Ordering procedures of  Parts for Different Territories (7)

 d) Ordering procedures of Electrical Parts (7)

1. VIEWPOINT OF PARTS REFERENCE LIST & COMPOSING UNITS

This Parts Catalog describes by coordinating the Electronic Compact Office Typewriter JP-15X series.

The composing units of the disassembly drawing have been divided in accordance to their functions in group order as; Printing Element, Cover & Circuit Board and etc.

Upon usage, compare the Model Number indicated at the top of the Index as per the models within the product Model Numbers and Parts Reference List and clarify the Main-Reference Number of each model unit then, procure the required part from the disassembly drawing within the Main-Reference Number.

2. REFERENCE NUMBERS

The reference numbers consist of the Main-Reference Number and the Sub-Reference Number.

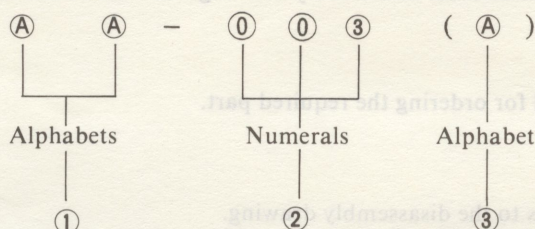
The functions of each are as follows:

a) Main-Reference Number

This serves the objective in joining the model functional disassembly drawing.

(Indication)

The Main-Reference Number is indicated with the five or six figures per functional disassembly drawing.



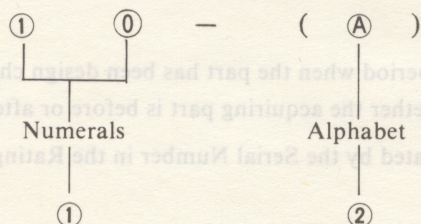
Definition of indicating items

No.	Definition
①	Series & model classification
②	Functional disassembly drawing classification
③	Disassembly drawing detail classification

b) Sub-Reference Number

This serves the objective in joining the functional disassembly drawing and Parts Name.

The Sub-Reference Number is indicated with one figure to three figures.



Definition of indicating items

No.	Definition
①	Disassembly drawing consecutive numbers
②	Design change occurrence classification

3. INDICATION DETAILS OF PARTS CODE & PARTS NAME

① ↓	MAIN-REF. NO.	Functional group name	FUNCTIONAL GROUP NAME ← ②						
	SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
							FROM	UP TO	
	↑ ③	↑ ④	↑ ⑤	↑ ⑥	↑ ⑦	↑ ⑧	↑ ⑨		

- 1 Main-Reference Number
This number joins the model and functional disassembly drawing.
- 2 Functional Classification name
Functional Classification name of Brother
- 3 Sub-Reference Number
This number joins the functional disassembly drawing and Parts Code and Parts Name.
- 4 Parts Code
This number is utilized for ordering the required part.
- 5 Parts Name
The Parts Name relates to the disassembly drawing.
- 6 Quantity (Q'ty)
This indicates the utilizing quantity in relation to the Parts Name of 5.
Even with the same Parts Code within the same page, it is separately mentioned every time when the Parts Name of 5 differs.
- 7 C/P
When it is mentioned in this column, it indicates that this part has been design changed.
It indicates the replacement of the mentioning figure difference. (For detail, please refer to the replacement item (design change part).
- 8 New Code
This indicates the New Code of the replacement item (design change part).
- 9 Production
This indicates the manufacturing period when the part has been design changed.
(This material helps in judging whether the acquiring part is before or after the design change.)
Caution : The production is indicated by the Serial Number in the Rating Plate.

PRODUCTION

FROM	UP TO
A4000010	C5011000

4. PARTS REPLACEMENT (DESIGN CHANGED PARTS)

When a part is design changed, there is a change with interchangeability and a change without the interchangeability.

Among these, the change which is capable to utilize the new part even on the old product is called "Parts Replacement".

In order to accomplish the After-Service most efficiently, it is most essential to adapt this replacement effectively.

a) Definition of C/P column code

Code	Term	Definition
A	Unit replacement	Replacement capable only with unit part
B	Assembly replacement	Replacement capable with past SET
C	Special replacement	It relates to special replacement when the assembled quantity is numerous with assembly replacement. In this case, attach sheet will be enclosed.
D	Discontinues parts	

b) Viewpoint of replacement

[Unit replacement]

PARTS CODE & PARTS NAME

Model:

MAIN-REF. NO.	PA—061	Functional group name	COVER					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
	507662001	Spring	1	A	535099001 (1)	A4000010	C5011000	

The Parts Code 507662001 has been revised to New Code 535099001 and the C/P is (A), it is a unit replacement. The old part production is from Serial Number A4000010 up to C5011000.

Caution : The figure within the () at the side of the New Code is the quantity of New Part requirement per piece of Old Part.

[Assembly replacement]

PARTS CODE & PARTS NAME

Model:

MAIN-REF. NO.	KA—061 (A)	Functional group name	MAIN COVER					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
10	518096001	Opener Spring	1	B	518206001 (1) 518207001 (1) 518155001 (1) 518174001 (1)	A7000010	D8011000	

The Parts Code 518096001 has been revised to New Code 518206001 and as the C/P is (B), it is an assembly replacement. The old part production is from Serial Number A7000010 up to D8011000.

Caution : The figure within the () at the side of the New Code is the quantity of New Part requirement per piece of Old Part.

5. ORDERING PROCEDURES

The ordering person is capable to perform the specified various procedures of the Parts Code, Parts Name and utilizing locations when ordering the required parts but, due to the knowledge of the ordering person and order receiving person, it may be difficult to convey the contents correctly.

To compensate for the misunderstanding of these persons and to request the correct parts, it is very important to sufficiently grasp the following precautions of the ordering procedures.

a) Ordering procedure of Common Parts

The following describes the definite communication and indicating items.

Model Number	Parts Code	Parts Name	Reference Numbers (Main & sub)	Quantity
EM-80	U06379001	Paper Meter	TC-016-1	10 pcs.

b) Ordering procedure of Color Part

The code column  Part differs with the color.

The Parts Code and Parts Name are separately indicated in the lower space as Special Parts

Please refer to this and order by matching the required color.

The following describes the define communication and indicating items.

Model Number
(Parts Code)
Parts Name
Color
Reference Numbers
(Main & sub)
Quantity

[Indication example]

Model No.	Parts Code	Parts Name	Color	Reference Nos. (Main & sub)	Quantity
EM-80	575195002	Lower Cover Unit	Black-101	TC-061-1	5 pcs.

- c)  Ordering procedure of parts for different territories.

The code column  part indicates the part utilized by different territories.

The Parts Code and Parts Name are separately indicated in the lower space as Special Parts.

Please order the required parts by referring to the disassembly drawing and Special Parts.

- (*) The code column  part is CIRCUIT BOARD ASSEMBLY, PRINTING ELEMENT, COVER, NAME PLATE, INSTRUCTION BOOK, RATING PLATE, CARTON.

- d) Ordering procedure of Electrical Parts

The Electrical Parts differ in accordance to the utilizing electrical standards of the territory.

The disassembly drawings are drawn separately to match the electrical standards of each territory.

Upon ordering, please refer to the disassembly drawing upper space for separate standards of each territory.

The following described the definite communication and indicating items.

Model Number

Parts Code

Parts Name

Electrical Standards

Reference Numbers

(Main & sub)

Quantity

[Indication example]

Model No.	Parts Code	Parts Name	Electrical Standards	Reference Nos. (Main & sub)	Quantity
EM-80	575638001	Filter Circuit Board Assembly	200~240V	TC-050-1	2 pcs.

GROUP NAME	MAIN REF. NO.	PAGE NO.
1. KEY TOP	ZZ-15X	10 ~ 27
2. PRINTING ELEMENT	TC-002	28 ~ 29
3. KEY TOP ATTACHMENT	TC-003	30 ~ 31
4. PAPER METER	TC-016	32 ~ 33
5. RIBBON FEED MECHANISM	TC-017	34 ~ 37
6. PLATEN MECHANISM	TC-031	38 ~ 41
7. CHASSIS	TC-033	42 ~ 43
8. CHASSIS ATTACHMENT	TC-034	44 ~ 45
9. CARRIAGE HEAD MECHANISM	TC-043	46 ~ 49
10. CARRIAGE HEAD ATTACHMENT	TC-044	50 ~ 51
11. FILTER CIRCUIT BOARD	TC-050	52 ~ 53
12. POWER SUPPLY CORD	TC-051	54 ~ 55
13. MOTOR	TC-054	56 ~ 57
14. HAMMER SOLENOID	TC-055	58 ~ 59
15. COVER	TC-061	60 ~ 63
16. DETECTOR	TC-100	64 ~ 65
17. RELAY CIRCUIT BOARD	TC-101	66 ~ 67
18. LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD	TC-102	68 ~ 69
19. POWER SUPPLY CIRCUIT BOARD	TC-104	70 ~ 71
20. POWER SUPPLY TRANSFORMER	TC-105	72 ~ 73
21. ACCESSORY	TC-910	74 ~ 75
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KEY TOP (FUNCTION KEYS)

Model EM-80

KEY TOP

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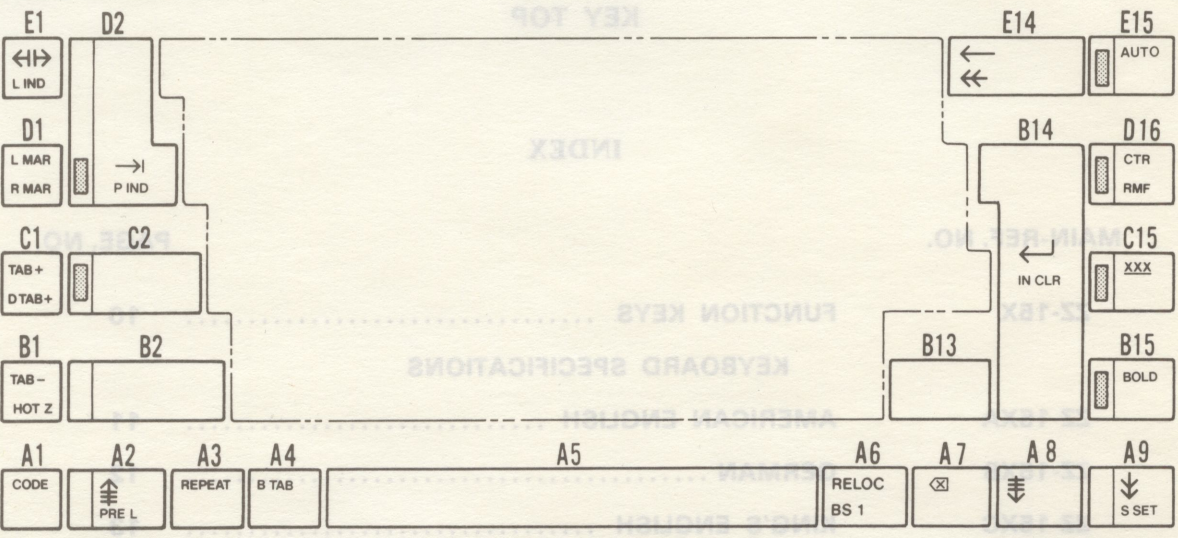
MAIN-REF. NO.

PAGE. NO.

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KEY TOP (FUNCTION KEYS)

Model: EM-80

MAIN-REF. NO. ZZ-15X							
SUB-REF. No.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
A1	U05621001	Code Key	1	D1	583312001	Left, Right, Margine Set Key	
A2	U06140001	Super Script, Pre Line Key	1	D2	576727001	Tab, Paragraph Indent Key	
A3	U05610001	Repeat key	1	D16	576841001	Centering, Right Margine Flash Key	
A4	576728001	Back Tab Key					
A5	U05616001	Space Bar					
A6	576729001	Relocation, Back Space 1 Key		E1	583305001	Margin Release, Line Indent Key	
A7	U05613001	Correction Key		E14	U05606001	Back Space, Express Back Space Key	
A8	U05612001	Sub Script Key		E15	576839001	Auto Return Key	
A9	576731001	Automatic Paper Set, Start Set Key					
B1	583327001	Tab Clear, Hot Z Set Key					
B2	U50480001	Power Shift Key (L)					
B13	U50481001	Power Shift Key (R)					
B14	U50479001	Return, Indent Clear Key					
B15	576730001	Bold Key					
C1	583320001	Tab Set, Decimal Tab Set Key					
C2	576838001	Shift Lock Key					
C15	576840001	Auto Underlining Key					

KEY TOP (AMERICAN ENGLISH)

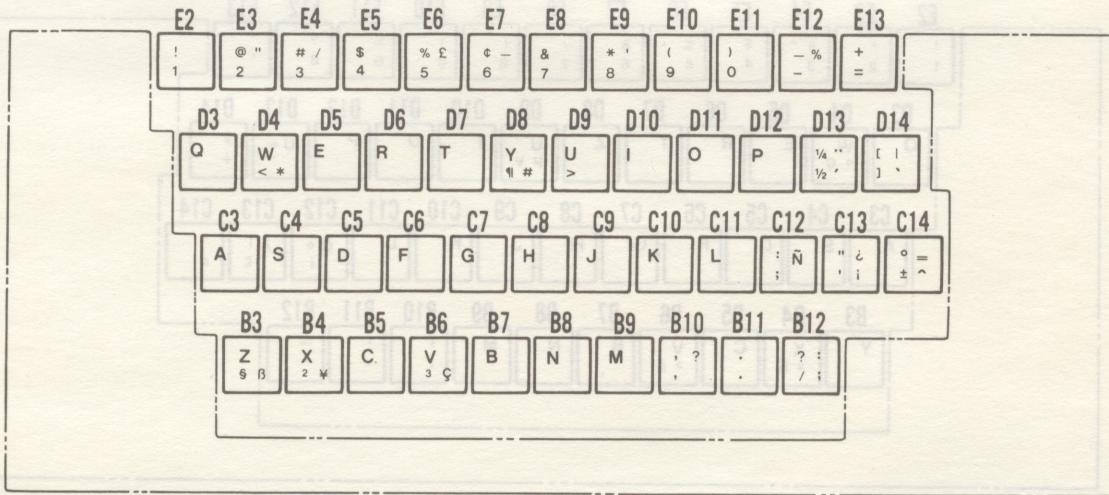
Model: EM-80

Model: EM-80

MAIN-
REF. NO.

ZZ-15XA

ZZ-15XB

MAIN-
REF. NO.

SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583328001	Key (Z § β)	1	D3	U50431001	Key (Q)	1
B4	583329001	Key (X ² ¥)	1	D4	583313001	Key (W < *)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583330001	Key (V ³ ç)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583314001	Key (Y ¶ #)	1
B9	583294001	Key (M)	1	D9	583315001	Key (U >)	1
B10	583331001	Key (, , ?)	1	D10	583264001	Key (I)	1
B11	583332001	Key (. .)	1	D11	583265001	Key (O)	1
B12	583333001	Key (? / : ;)	1	D12	583266001	Key (P)	1
C3	583273001	Key (A)	1	D13	583316001	Key (¼ ½ " ')	1
C4	583274001	Key (S)	1	D14	583317001	Key ([] `)	1
C5	583275001	Key (D)	1	E2	U50429001	Key (! 1)	1
C6	583276001	Key (F)	1	E3	583306001	Key (@ 2 ")	1
C7	583277001	Key (G)	1	E4	583307001	Key (# 3 /)	1
C8	583278001	Key (H)	1	E5	583241001	Key (\$ 4)	1
C9	583279001	Key (J)	1	E6	583308001	Key (% 5 £)	1
C10	583280001	Key (K)	1	E7	583309001	Key (€ 6 _)	1
C11	583281001	Key (L)	1	E8	583244001	Key (& 7)	1
C12	583321001	Key (: ; Ñ)	1	E9	583310001	Key (* 8 ')	1
C13	583322001	Key (" ' ÿ i)	1	E10	583246001	Key ((9)	1
C14	583323001	Key (° ± = ^)	1	E11	583247001	Key () 0)	1
				E12	583311001	Key (_ = %)	1
				E13	583249001	Key (+ =)	1

KEY TOP (GERMAN)

Model: EM-80

MAIN-REF. NO.		ZZ-15XB					
E2E3E4E5E6E7E8E9E10E11E12E13 !1"2\$3^4%5&6/7(8)9=0?β`. D3D4D5D6D7D8D9D10D11D12D13D14 QW°çERTZUμνIOPÜ=.* C3C4C5C6C7C8C9C10C11C12C13C14 ASDFGHJKLÖ¿iÄ £'# B3B4B5B6B7B8B9B10B11B12 YX²ÑCV³ñBNM;:.-							
SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583358001	Key (Y)	1	D3	U50431001	Key (Q)	1
B4	583359001	Key (X ² Ñ)	1	D4	583350001	Key (W ° ç)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583360001	Key (V ³ ñ)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583351001	Key (Z)	1
B9	583294001	Key (M)	1	D9	583352001	Key (U μ ¥)	1
B10	583361001	Key (; ,)	1	D10	583264001	Key (I)	1
B11	583362001	Key (: .)	1	D11	583265001	Key (O)	1
B12	583363001	Key (_ -)	1	D12	583266001	Key (P)	1
				D13	583353001	Key (Ü = ")	1
				D14	583354001	Key (* +)	1
C3	583273001	Key (A)	1				
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	U50429001	Key (! 1)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583342001	Key (\$ 3 ^)	1
C8	583278001	Key (H)	1	E5	583241001	Key (\$ 4)	1
C9	583279001	Key (J)	1	E6	583242001	Key (% 5)	1
C10	583280001	Key (K)	1	E7	583343001	Key (& 6)	1
C11	583281001	Key (L)	1	E8	583344001	Key (/ 7)	1
C12	583355001	Key (Ö ¿ i)	1	E9	583345001	Key ((8)	1
C13	583356001	Key (Ä £)	1	E10	583346001	Key () 9)	1
C14	583357001	Key (' #)	1	E11	583347001	Key (= 0)	1
				E12	583348001	Key (? β)	1
				E13	583349001	Key (` ')	1

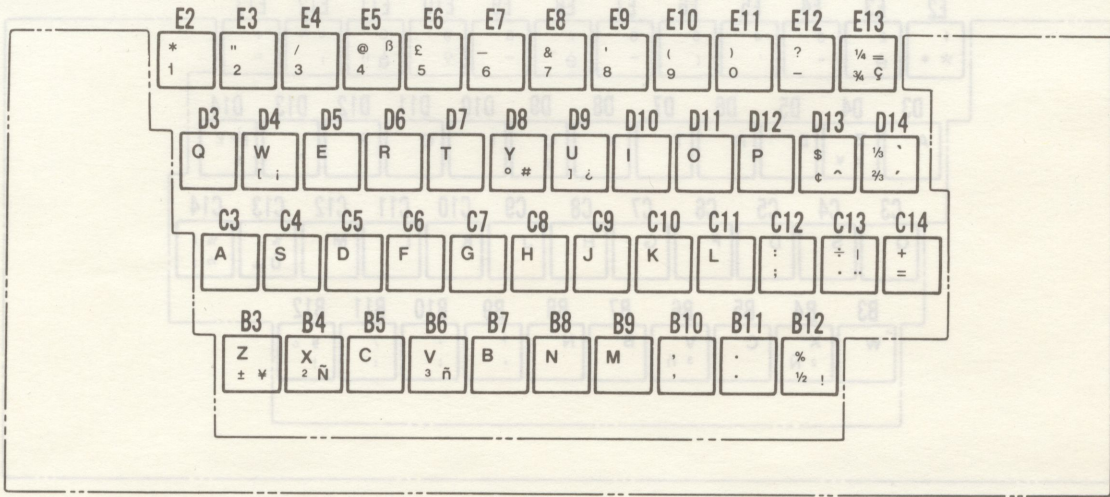
KEY TOP (KING'S ENGLISH)

Model: EM-80

Model: EM-80

MAIN-REF. NO.	ZZ-15XC
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MAIN-REF. NO.	ZZ-15XC
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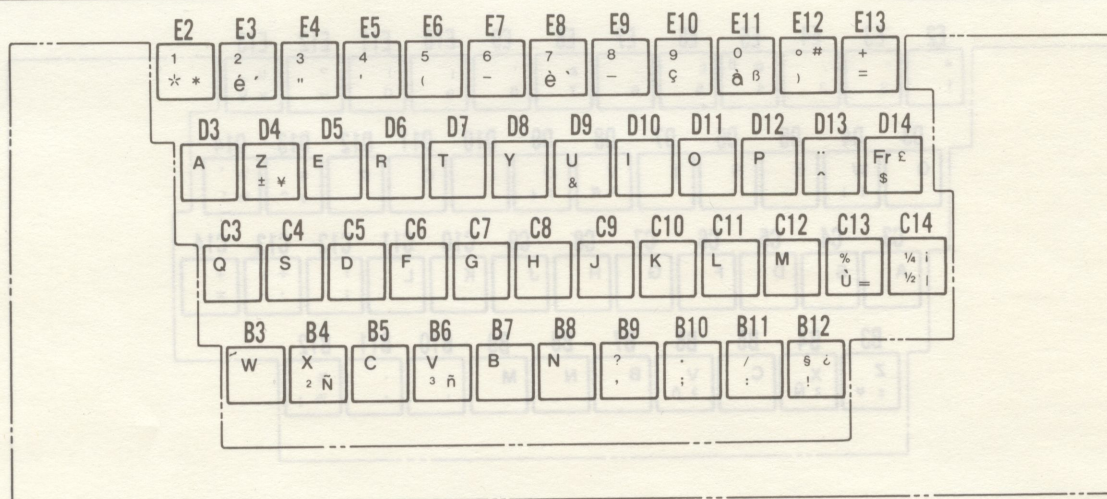
SUB-REF. NO.	CODE	NAME	Q'TY	SUB-	CODE	NAME	Q'TY
B3	583616001	Key (Z + ¥)	1	D3	U50431001	Key (Q)	1
B4	583359001	Key (X ² Ñ)	1	D4	583610001	Key (W [i)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583360001	Key (V ³ ñ)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583611001	Key (Y ° #)	1
B9	583294001	Key (M)	1	D9	583578001	Key (U] ¿)	1
B10	583571001	Key (, ,)	1	D10	583264001	Key (I)	1
B11	583332001	Key (. .)	1	D11	583265001	Key (O)	1
B12	583617001	Key (% ½ !)	1	D12	583266001	Key (P)	1
C3	583273001	Key (A)	1	D13	583612001	Key (\$ ¢ ^)	1
C4	583274001	Key (S)	1	D14	583613001	Key (⅓ ⅔ ' ')	1
C5	583275001	Key (D)	1	E2	583606001	Key (* 1)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583598001	Key (/ 3)	1
C8	583278001	Key (H)	1	E5	583607001	Key (@ 4 B)	1
C9	583279001	Key (J)	1	E6	583608001	Key (£ 5)	1
C10	583280001	Key (K)	1	E7	583585001	Key (_ 6)	1
C11	583281001	Key (L)	1	E8	583244001	Key (& 7)	1
C12	583569001	Key (: ;)	1	E9	583586001	Key (' 8)	1
C13	583614001	Key (÷ . ")	1	E10	583246001	Key ((9)	1
C14	583615001	Key (+ =)	1	E11	583247001	Key () 0)	1
				E12	583609001	Key (? -)	1
				E13	583588001	Key (¼ ¾ = ¢)	1

KEY TOP (FRENCH)

Model: EM-80

MAIN-
REF. NO.

ZZ-15XD



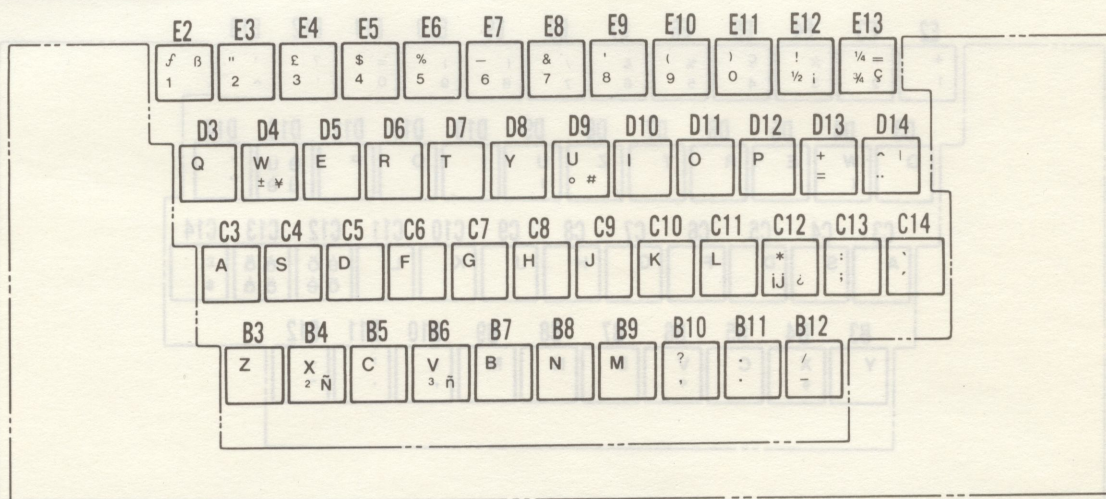
SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583538001	Key (W)	1	D3	583528001	Key (A)	1
B4	583359001	Key (X ² Ñ)	1	D4	583529001	Key (Z ± ¥)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583360001	Key (V ³ ñ)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D7	583530001	Key (Y)	1
B9	583539001	Key (? .)	1	D9	583531001	Key (U &)	1
B10	583540001	Key (; :)	1	D10	583264001	Key (I)	1
B11	583541001	Key (/ :)	1	D11	583265001	Key (O)	1
B12	583542001	Key (\$!)	1	D12	583266001	Key (P)	1
				D13	583532001	Key (¨)	1
C3	583534001	Key (Q)	1	D14	583533001	Key (Fr £ \$)	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	583517001	Key (1 *)	1
C6	583276001	Key (F)	1	E3	583518001	Key (2 é)	1
C7	583277001	Key (G)	1	E4	583519001	Key (3 ")	1
C8	583278001	Key (H)	1	E5	583520001	Key (4 ')	1
C9	583279001	Key (J)	1	E6	583521001	Key (5 ()	1
C10	583280001	Key (K)	1	E7	583522001	Key (6 -)	1
C11	583281001	Key (L)	1	E8	583523001	Key (7 è)	1
C12	583535001	Key (M)	1	E9	583524001	Key (8 —)	1
C13	583536001	Key (% ù =)	1	E10	583525001	Key (9 ç)	1
C14	583537001	Key (¼ ½)	1	E11	583526001	Key (0 à ß)	1
				E12	583527001	Key (° #)	1
				E13	583249001	Key (+ =)	1

KEY TOP (DUTCH)

Model: EM-80

Model: EM-80

MAIN- REF. NO.	ZZ-15XE
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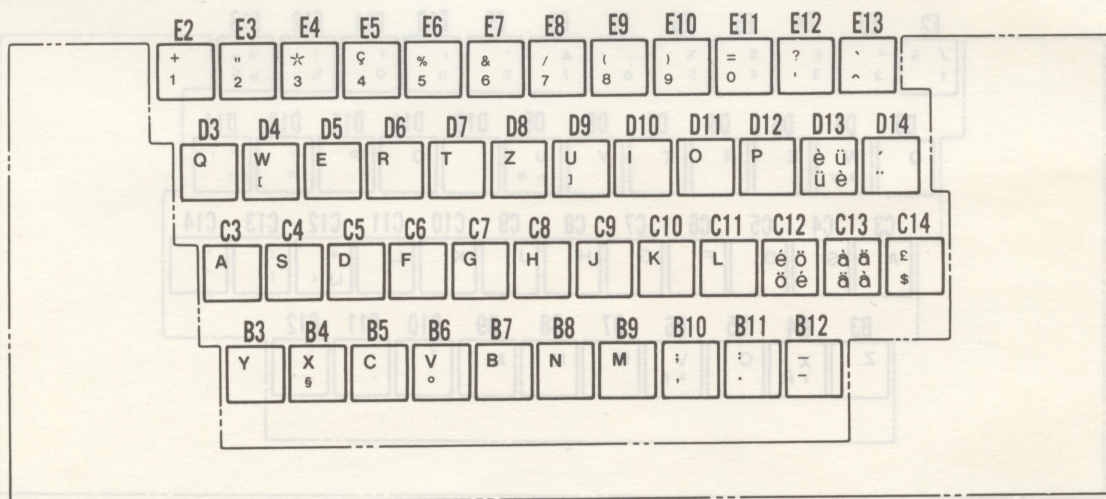
SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583595001	Key (Z)	1	D3	U50431001	Key (Q)	1
B4	583359001	Key (X ² Ñ)	1	D4	583589001	Key (W + ¥)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583360001	Key (V ³ ñ)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583530001	Key (Y)	1
B9	583294001	Key (M)	1	D9	583590001	Key (U ° #)	1
B10	583539001	Key (? ,)	1	D10	583264001	Key (I)	1
B11	583332001	Key (. ')	1	D11	583265001	Key (O)	1
B12	583596001	Key (/ -)	1	D12	583266001	Key (P)	1
				D13	583591001	Key (+ =)	1
C3	583273001	Key (A)	1	D14	583592001	Key (^ " ')	1
C4	583273001	Key (S)	1				
C5	583275001	Key (D)	1	E2	583583001	Key (f 1 ß)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583584001	Key (£ 3)	1
C8	583278001	Key (H)	1	E5	583241001	Key (\$ 4)	1
C9	583279001	Key (J)	1	E6	583242001	Key (% 5)	1
C10	583280001	Key (K)	1	E7	583585001	Key (— 6)	1
C11	583281001	Key (L)	1	E8	583244001	Key (& 7)	1
C12	583593001	Key (* ij ç)	1	E9	583586001	Key (' 8)	1
C13	583569001	Key (: ;)	1	E10	583246001	Key ((9)	1
C14	583594001	Key (, ' .)	1	E11	583247001	Key () 0)	1
				E12	583587001	Key (! ½ i)	1
				E13	583588001	Key (¼ ¾ = ç)	1

KEY TOP (SWISS GERMAN) FRENCH

Model: EM-80

MAIN-
REF. NO.

ZZ-15XF



SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583358001	Key (Y)	1	D3	U50431001	Key (Q)	1
B4	583676001	Key (X §)	1	D4	583669001	Key (W [)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583677001	Key (V °)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583351001	Key (Z)	1
B9	583294001	Key (M)	1	D9	583670001	Key (U)	1
B10	583361001	Key (; ,)	1	D10	583264001	Key (I)	1
B11	583362001	Key (: .)	1	D11	583265001	Key (O)	1
B12	583363001	Key (_ -)	1	D12	583266001	Key (P)	1
				D13	583671001	Key (è ü è)	1
				D14	583672001	Key (' ")	1
C3	583273001	Key (A)	1	E2	583664001	Key (+ 1)	1
C4	583274001	Key (S)	1	E3	583341001	Key (" 2)	1
C5	583275001	Key (D)	1	E4	583665001	Key (* 3)	1
C6	583276001	Key (F)	1	E5	583666001	Key (ç 4)	1
C7	583277001	Key (G)	1	E6	583242001	Key (% 5)	1
C8	583278001	Key (H)	1	E7	583343001	Key (& 6)	1
C9	583279001	Key (J)	1	E8	583344001	Key (/ 7)	1
C10	583280001	Key (K)	1	E9	583345001	Key ((8)	1
C11	583281001	Key (L)	1	E10	583346001	Key () 9)	1
C12	583673001	Key (é ö é)	1	E11	583347001	Key (= 0)	1
C13	583674001	Key (à ä à)	1	E12	583667001	Key (? ')	1
C14	583675001	Key (£ \$)	1	E13	583668001	Key (` ^)	1

KEY TOP (BILINGUAL)

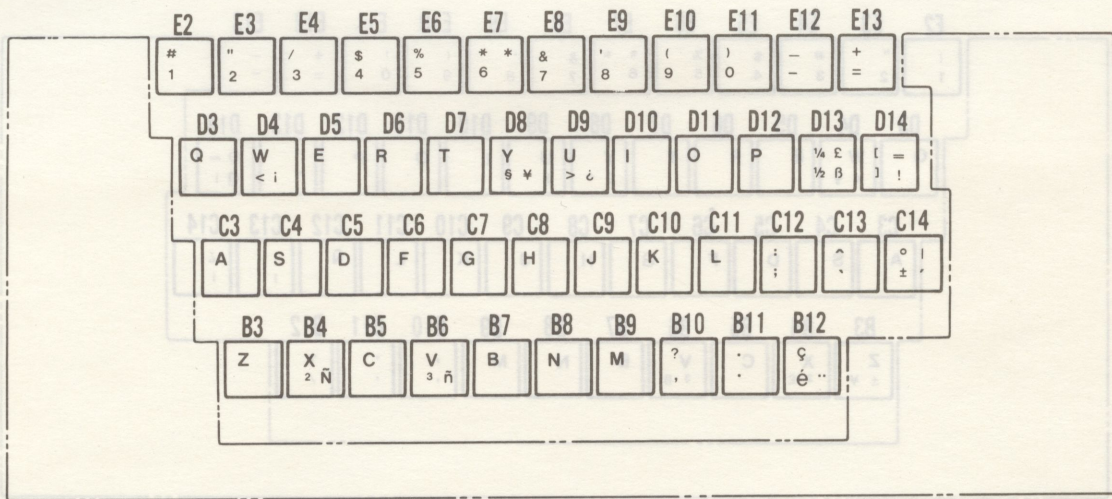
Model: EM-80

Model: EM-80

MAIN-
REF. NO.

ZZ-15XG

ZZ-15XG

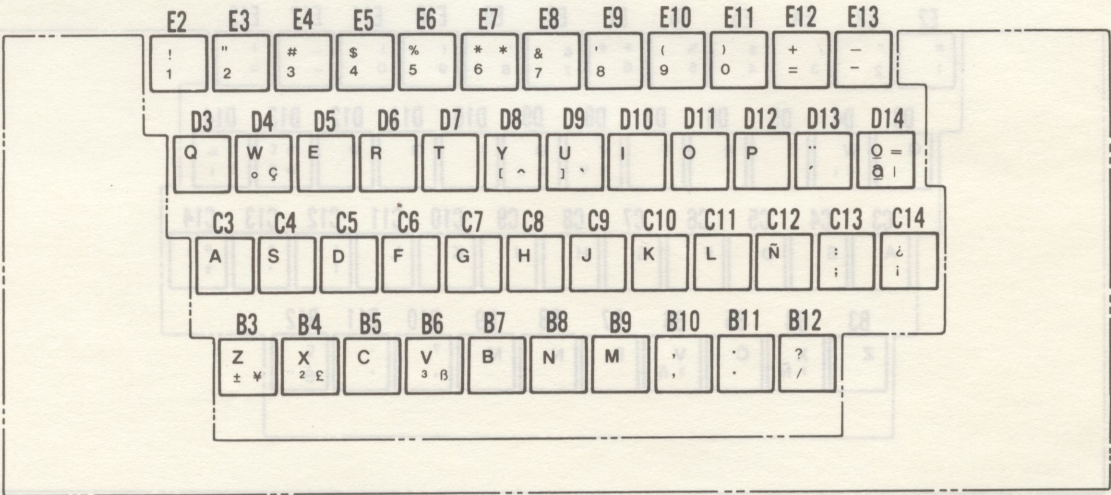
MAIN-
REF. NO.

SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583595001	Key (Z)	1	D3	U50431001	Key (Q)	1
B4	583359001	Key (X ² Ñ)	1	D4	583566001	Key (W < i)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583360001	Key (V ³ ñ)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583600001	Key (Y § ¥)	1
B9	583294001	Key (M)	1	D9	583568001	Key (U > ù)	1
B10	583539001	Key (? ,)	1	D10	583264001	Key (I)	1
B11	583332001	Key (. .)	1	D11	583265001	Key (O)	1
B12	583605001	Key (¢ é ")	1	D12	583266001	Key (P)	1
				D13	583601001	Key (¼ ½ £ β)	1
C3	583273001	Key (A)	1	D14	583602001	Key ([] = !)	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	583597001	Key (# 1)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583598001	Key (/ 3)	1
C8	583278001	Key (H)	1	E5	583241001	Key (\$ 4)	1
C9	583279001	Key (J)	1	E6	583242001	Key (% 5)	1
C10	583280001	Key (K)	1	E7	583599001	Key (* 6 *)	1
C11	583281001	Key (L)	1	E8	583244001	Key (& 7)	1
C12	583569001	Key (; ;)	1	E9	583586001	Key (' 8)	1
C13	583603001	Key (^ `)	1	E10	583246001	Key ((9)	1
C14	583604001	Key (° ± ')	1	E11	583247001	Key () 0)	1
				E12	583565001	Key (_ -)	1
				E13	583249001	Key (+ =)	1

KEY TOP (SPANISH FOR South Central AMERICAN)

Model: EM-80

MAIN-REF. NO.	ZZ-15XH
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SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583616001	Key (Z ± ¥)	1	D3	U50431001	Key (Q)	1
B4	583703001	Key (X ² £)	1	D4	583350001	Key (W ° ¢)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583704001	Key (V ³ ß)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583743001	Key (Y [^)	1
B9	583294001	Key (M)	1	D9	583744001	Key (U] `)	1
B10	583571001	Key (, ,)	1	D10	583264001	Key (I)	1
B11	583332001	Key (. .)	1	D11	583265001	Key (O)	1
B12	583572001	Key (? /)	1	D12	583266001	Key (P)	1
				D13	583698001	Key (" ')	1
C3	583273001	Key (A)	1	D14	583745001	Key (¢ ¢ =)	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	U50429001	Key (! 1)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583562001	Key (# 3)	1
C8	583278001	Key (H)	1	E5	583241001	Key (\$ 4)	1
C9	583279001	Key (J)	1	E6	583242001	Key (% 5)	1
C10	583280001	Key (K)	1	E7	583599001	Key (» 6 *)	1
C11	583281001	Key (L)	1	E8	583244001	Key (& 7)	1
C12	583700001	Key (Ñ)	1	E9	583586001	Key (' 8)	1
C13	583569001	Key (: ;)	1	E10	583246001	Key ((9)	1
C14	583746001	Key (¿ ¡)	1	E11	583247001	Key () 0)	1
				E12	583249001	Key (+ =)	1
				E13	583565001	Key (_ -)	1

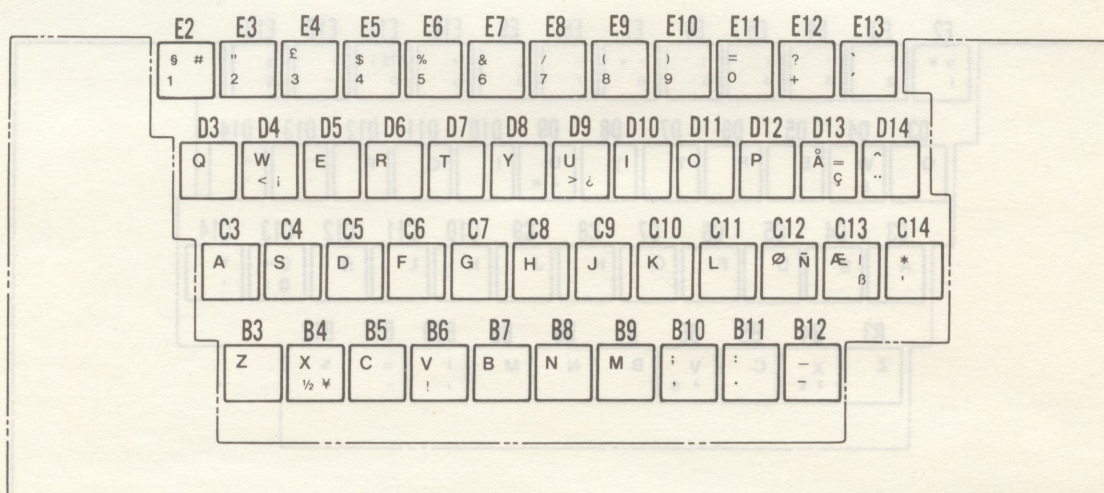
KEY TOP (NORWEGIAN)

Model: EM-80

Model: EM-80

MAIN-
REF. NO.

ZZ-15XI



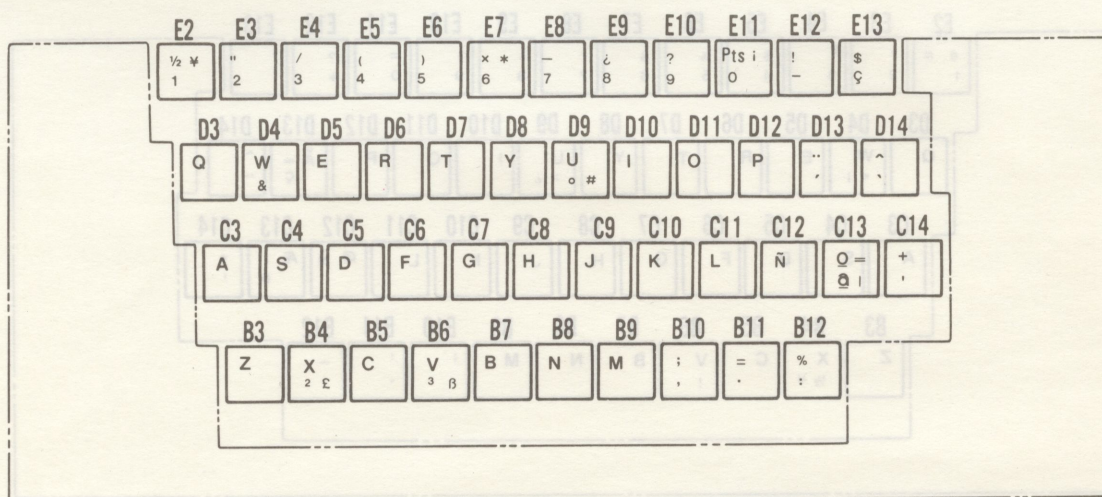
SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583595001	Key (Z)	1	D3	U50431001	Key (Q)	1
B4	583685001	Key (X ½ ¥)	1	D4	583566001	Key (W < i)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583686001	Key (V !)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583530001	Key (Y)	1
B9	583294001	Key (M)	1	D9	583568001	Key (U > ð)	1
B10	583361001	Key (; ,)	1	D10	583264001	Key (I)	1
B11	583362001	Key (: .)	1	D11	583265001	Key (O)	1
B12	583363001	Key (_ -)	1	D12	583266001	Key (P)	1
				D13	583680001	Key (Å = ç)	1
C3	583273001	Key (A)	1	D14	583681001	Key (^ ")	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	583678001	Key (§ 1 #)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583584001	Key (£ 3)	1
C8	583278001	Key (H)	1	E5	583241001	Key (\$ 4)	1
C9	583279001	Key (J)	1	E6	583242001	Key (% 5)	1
C10	583280001	Key (K)	1	E7	583343001	Key (& 6)	1
C11	583281001	Key (L)	1	E8	583344001	Key (/ 7)	1
C12	583682001	Key (ø Ñ)	1	E9	583345001	Key ((8)	1
C13	583683001	Key (æ ß)	1	E10	583346001	Key () 9)	1
C14	583684001	Key (* ')	1	E11	583347001	Key (= 0)	1
				E12	583679001	Key (? +)	1
				E13	583349001	Key (` ')	1

KEY TOP (SPANISH FOR SPAIN)

Model: EM-80

MAIN-
REF. NO.

ZZ-15XJ



SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583595001	Key (Z)	1	D3	U50431001	Key (Q)	1
B4	583703001	Key (X ² £)	1	D4	583697001	Key (W &)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583704001	Key (V ³ ß)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583530001	Key (Y)	1
B9	583294001	Key (M)	1	D9	583590001	Key (U ° #)	1
B10	583361001	Key (; ,)	1	D10	583264001	Key (I)	1
B11	583705001	Key (= .)	1	D11	583265001	Key (O)	1
B12	583706001	Key (% :)	1	D12	583266001	Key (P)	1
				D13	583698001	Key (" ')	1
C3	583273001	Key (A)	1	D14	583699001	Key (^ ')	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	583687001	Key (1/2 ¢)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583598001	Key (/ 3)	1
C8	583278001	Key (H)	1	E5	583688001	Key ((4)	1
C9	583279001	Key (J)	1	E6	583689001	Key () 5)	1
C10	583280001	Key (K)	1	E7	583690001	Key (x 6 *)	1
C11	583281001	Key (L)	1	E8	583691001	Key (_ 7)	1
C12	583700001	Key (Ñ)	1	E9	583692001	Key (¿ 8)	1
C13	583701001	Key (Q ã =)	1	E10	583693001	Key (? 9)	1
C14	583702001	Key (+ ')	1	E11	583694001	Key (Prs 0 i)	1
				E12	583695001	Key (! -)	1
				E13	583696001	Key (\$ ¢)	1

KEY TOP (ITALIAN)

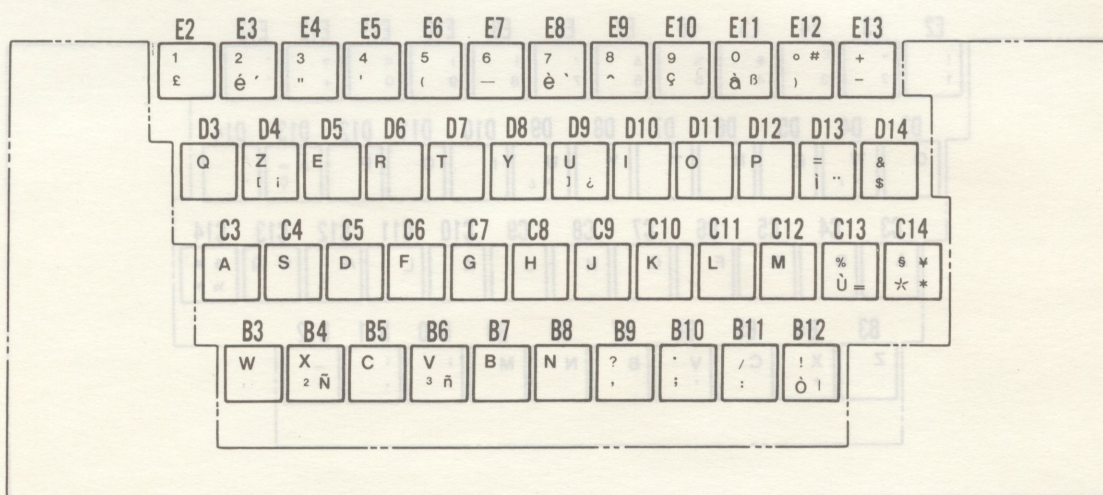
Model: EM-80

Model: EM-80

MAIN-
REF. NO.

ZZ-15XK

ZZ-15XK

MAIN-
REF. NO.

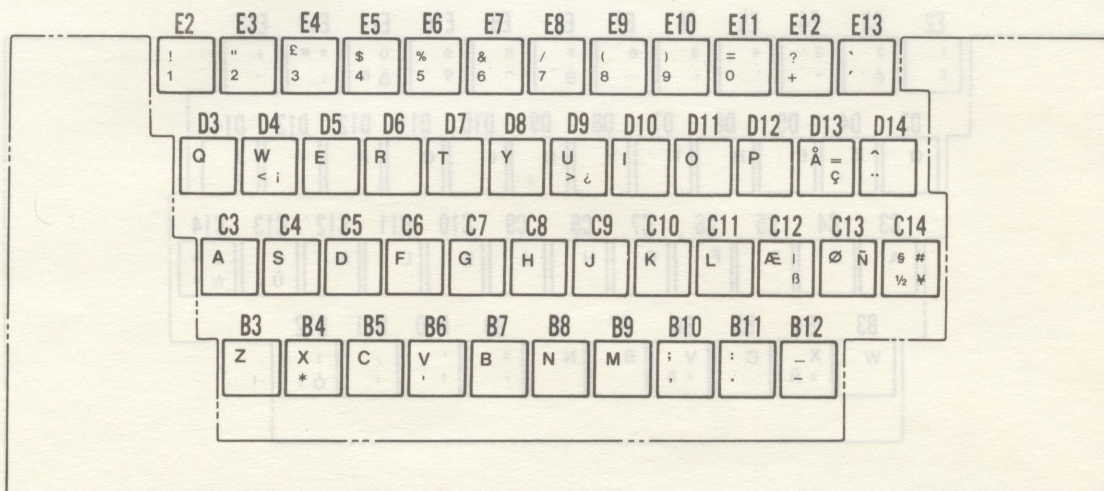
SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583538001	Key (W)	1	D3	U50431001	Key (Q)	1
B4	583359001	Key (X ² Ñ)	1	D4	583577001	Key (Z [i)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583360001	Key (V ³ ñ)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583530001	Key (Y)	1
B9	583539001	Key (? ,)	1	D9	583578001	Key (U] ð)	1
B10	583361001	Key (; :)	1	D10	583264001	Key (I)	1
B11	583541001	Key (/ :)	1	D11	583265001	Key (O)	1
B12	583582001	Key (! ò)	1	D12	583266001	Key (P)	1
				D13	583579001	Key (= i ")	1
C3	583273001	Key (A)	1	D14	583580001	Key (& \$)	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	583573001	Key (1 £)	1
C6	583276001	Key (F)	1	E3	583518001	Key (2 é ')	1
C7	583277001	Key (G)	1	E4	583519001	Key (3 ")	1
C8	583278001	Key (H)	1	E5	583520001	Key (4 ')	1
C9	583279001	Key (J)	1	E6	583521001	Key (5 ()	1
C10	583280001	Key (K)	1	E7	583574001	Key (6 —)	1
C11	583281001	Key (L)	1	E8	583523001	Key (7 è ')	1
C12	583535001	Key (M)	1	E9	583575001	Key (8 ^)	1
C13	583536001	Key (% ù =)	1	E10	583525001	Key (9 ç)	1
C14	583581001	Key (\$ * ¥ *)	1	E11	583526001	Key (0 à ß)	1
				E12	583527001	Key (° #)	1
				E13	583576001	Key (+ -)	1

KEY TOP (DANISH)

Model: EM-80

MAIN-
REF. NO.

ZZ-15XL



SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583595001	Key (Z)	1	D3	U50431001	Key (Q)	1
B4	583708001	Key (X *)	1	D4	583566001	Key (W < i)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583709001	Key (V ')	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583530001	Key (Y)	1
B9	583294001	Key (M)	1	D9	583568001	Key (U > u)	1
B10	583361001	Key (; ,)	1	D10	583264001	Key (I)	1
B11	583362001	Key (: .)	1	D11	583265001	Key (O)	1
B12	583363001	Key (_ -)	1	D12	583266001	Key (P)	1
				D13	583680001	Key (Å = ç)	1
C3	583273001	Key (A)	1	D14	583681001	Key (^ .)	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	U50429001	Key (! 1)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583584001	Key (£ 3)	1
C8	583278001	Key (H)	1	E5	583241001	Key (\$ 4)	1
C9	583279001	Key (J)	1	E6	583242001	Key (% 5)	1
C10	583280001	Key (K)	1	E7	583343001	Key (& 6)	1
C11	583281001	Key (L)	1	E8	583344001	Key (/ 7)	1
C12	583683001	Key (Æ β)	1	E9	583345001	Key ((8)	1
C13	583682001	Key (ø Ñ)	1	E10	583346001	Key () 9)	1
C14	583707001	Key (§ ½ # ¥)	1	E11	583347001	Key (= 0)	1
				E12	583679001	Key (? +)	1
				E13	583349001	Key (` ' .)	1

KEY TOP (SOUTH AFRICAN)

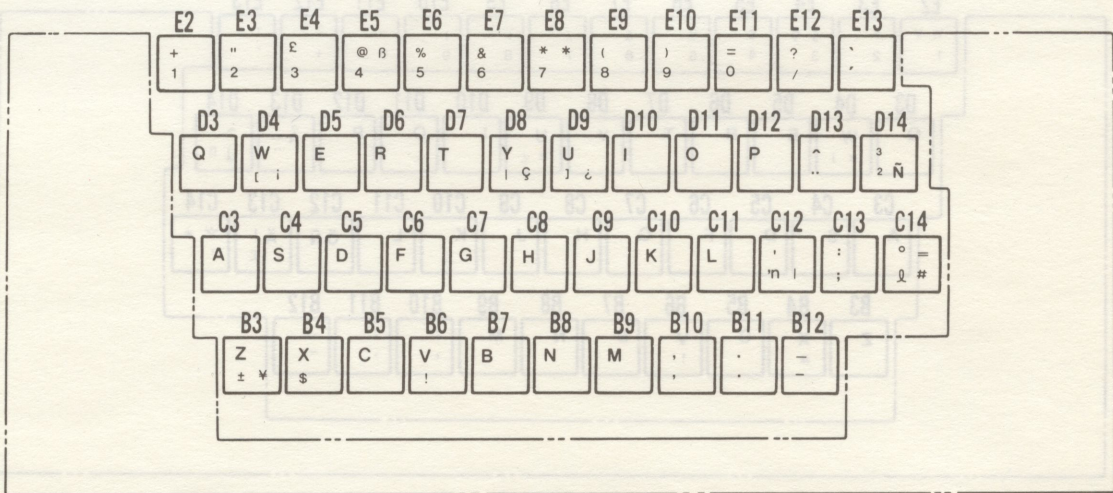
Model: EM-80

Model: EM-80

MAIN-
REF. NO.

ZZ-15XM

ZZ-15XM

MAIN-
REF. NO.

SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583616001	Key (Z ± ¥)	1	D3	U50431001	Key (Q)	1
B4	583716001	Key (X \$)	1	D4	583610001	Key (W [i)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583686001	Key (V !)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583712001	Key (Y ç)	1
B9	584294001	Key (M)	1	D9	583578001	Key (U] é)	1
B10	583571001	Key (, ,)	1	D10	583264001	Key (D)	1
B11	583332001	Key (. .)	1	D11	583265001	Key (O)	1
B12	583363001	Key (_ -)	1	D12	583266001	Key (P)	1
				D13	583681001	Key (^ ")	1
C3	583273001	Key (A)	1	D14	583713001	Key (3 2 Ñ)	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	583664001	Key (+ 1)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583484001	Key (£ 3)	1
C8	583278001	Key (H)	1	E5	583607001	Key (# 4 B)	1
C9	583279001	Key (J)	1	E6	583242001	Key (% 5)	1
C10	583280001	Key (K)	1	E7	583343001	Key (& 6)	1
C11	583281001	Key (L)	1	E8	583710001	Key (» 7 *)	1
C12	583714001	Key (' n)	1	E9	583345001	Key ((8)	1
C13	583569001	Key (: ;)	1	E10	583346001	Key () 9)	1
C14	583715001	Key (° * = #)	1	E11	583347001	Key (= 0)	1
				E12	583711001	Key (? /)	1
				E13	583349001	Key (` ')	1

KEY TOP (SWEDISH)

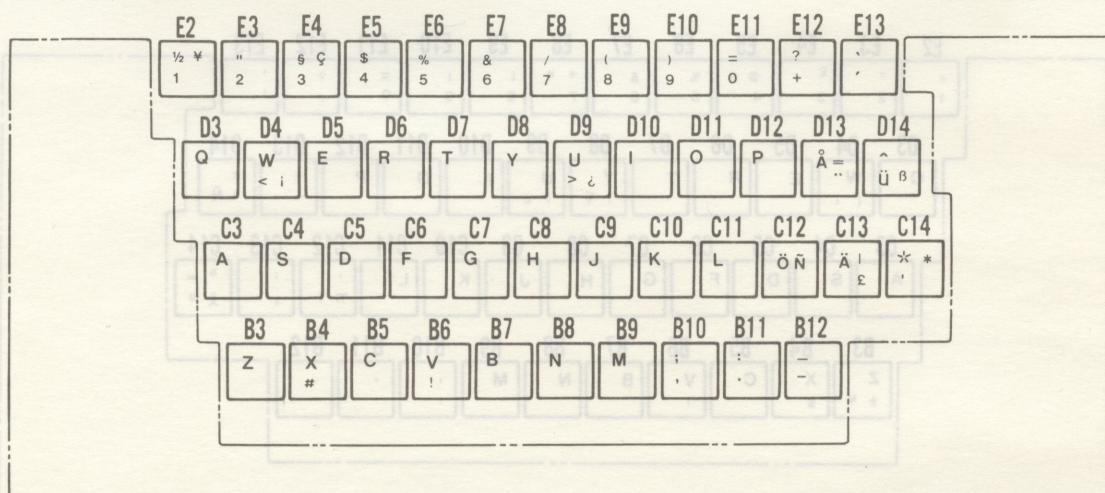
Model: EM-80

Model: EM-80

MAIN-
REF. NO.

ZZ-15XN

ZZ-15XN

MAIN-
REF. NO.

SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583595001	Key (Z)	1	D3	U50431001	Key (Q)	1
B4	583741001	Key (X #)	1	D4	583566001	Key (W < i)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583686001	Key (V !)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583530001	Key (Y)	1
B9	583294001	Key (M)	1	D9	583568001	Key (U > u)	1
B10	583361001	Key (; ,)	1	D10	583264001	Key (I)	1
B11	583362001	Key (: .)	1	D11	583265001	Key (O)	1
B12	583363001	Key (_ -)	1	D12	583266001	Key (P)	1
				D13	583736001	Key (Å = ..)	1
C3	583273001	Key (A)	1	D14	583737001	Key (^ ü ß)	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	583687001	Key (1/2 ¥)	1
C6	583276001	Key (F)	1	E3	583341001	Key (" 2)	1
C7	583277001	Key (G)	1	E4	583735001	Key (\$ 3 ¢)	1
C8	583278001	Key (H)	1	E5	583241001	Key (\$ 4)	1
C9	583279001	Key (J)	1	E6	583242001	Key (% 5)	1
C10	583280001	Key (K)	1	E7	583343001	Key (& 6)	1
C11	583281001	Key (L)	1	E8	583344001	Key (/ 7)	1
C12	583738001	Key (ö Ñ)	1	E9	583345001	Key ((8)	1
C13	583356001	Key (Ä £)	1	E10	583346001	Key () 9)	1
C14	583740001	Key (' *)	1	E11	583347001	Key (= 0)	1
				E12	583679001	Key (? +)	1
				E13	583349001	Key (^ ' ')	1

KEY TOP (FINNISH)

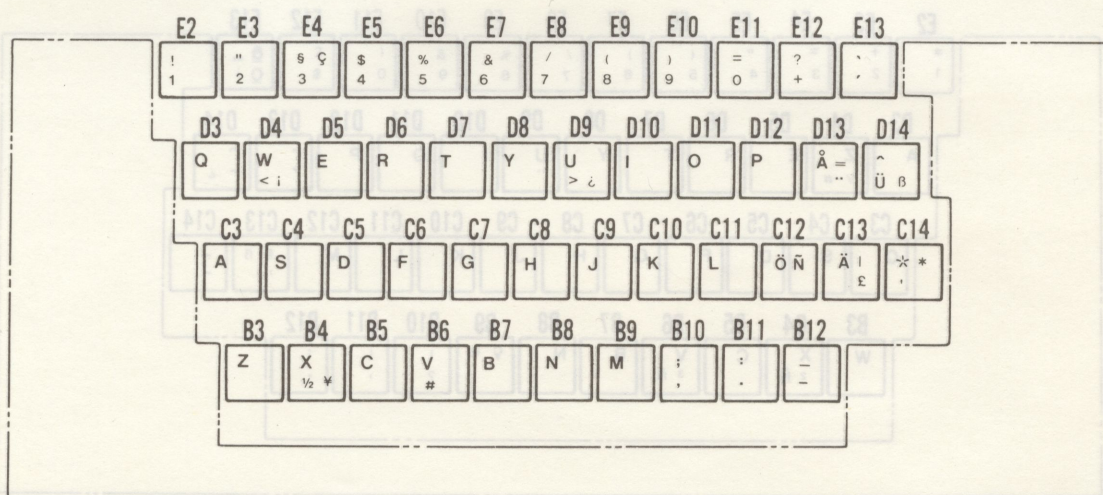
Model: EM-80

Model: EM-80

MAIN-
REF. NO.

ZZ-15XO

ZZ-15XP

MAIN-
REF. NO.

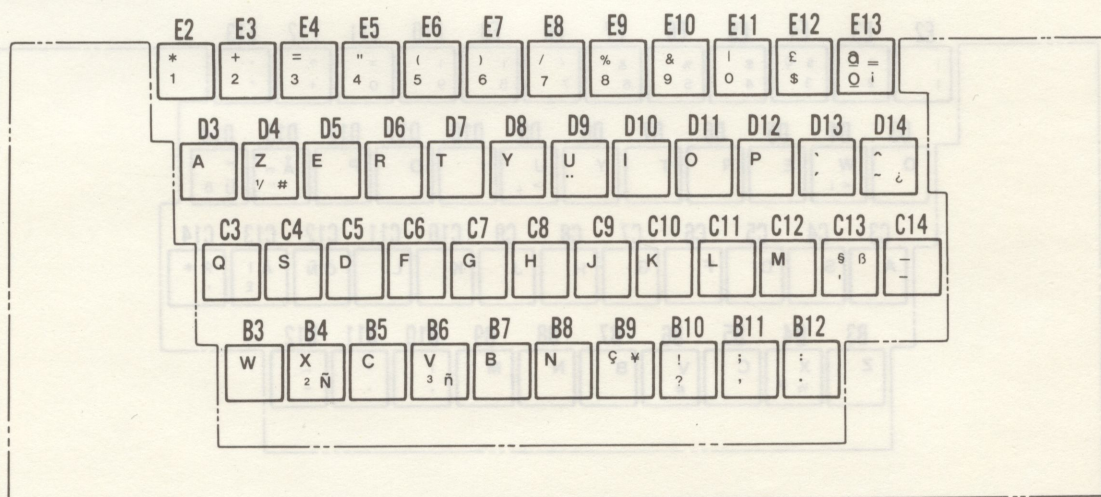
SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583595001	Key (Z)	1	D3	U50431001	Key (Q)	1
B4	583685001	Key (X ½ ¥)	1	D4	583566001	Key (W < i)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583742001	Key (V #)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583530001	Key (Y)	1
B9	583294001	Key (M)	1	D9	583568001	Key (U > i)	1
B10	583361001	Key (; ,)	1	D10	583264001	Key (I)	1
B11	583362001	Key (: .)	1	D11	583265001	Key (O)	1
B12	583363001	Key (— -)	1	D12	583266001	Key (P)	1
				D13	583736001	Key (Å =)	1
				D14	583737001	Key (¨ ü ß)	1
C3	583273001	Key (A)	1	E2	U50429001	Key (! 1)	1
C4	583274001	Key (S)	1	E3	583341001	Key (" 2)	1
C5	583275001	Key (D)	1	E4	583735001	Key (§ 3 ¢)	1
C6	583276001	Key (F)	1	E5	583241001	Key (\$ 4)	1
C7	583277001	Key (G)	1	E6	583242001	Key (% 5)	1
C8	583278001	Key (H)	1	E7	583343001	Key (& 6)	1
C9	583279001	Key (J)	1	E8	583344001	Key (/ 7)	1
C10	583280001	Key (K)	1	E9	583345001	Key ((8)	1
C11	583281001	Key (L)	1	E10	583346001	Key () 9)	1
C12	583738001	Key (Ö Ñ)	1	E11	583347001	Key (= 0)	1
C13	583356001	Key (Ä £)	1	E12	583679001	Key (? +)	1
C14	583740001	Key (* *)	1	E13	583349001	Key (` ')	1

KEY TOP (PORTUGUESE)

Model: EM-80

MAIN-
REF. NO.

ZZ-15XP



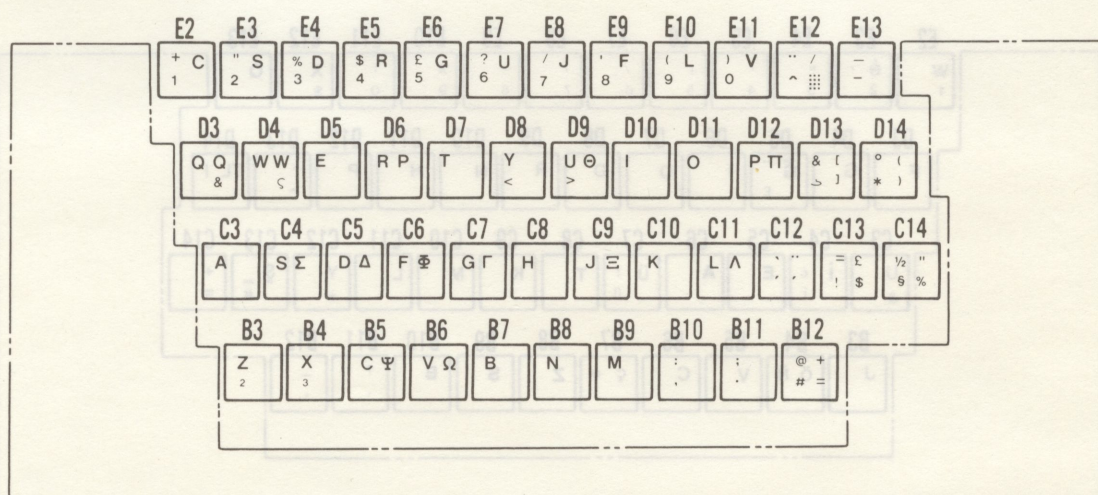
SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583538001	Key (W)	1	D3	583528001	Key (A)	1
B4	583359001	Key (X ² Ñ)	1	D4	583727001	Key (Z V #)	1
B5	583290001	Key (C)	1	D5	583259001	Key (E)	1
B6	583360001	Key (V ³ ñ)	1	D6	583260001	Key (R)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583530001	Key (Y)	1
B9	583733001	Key (ç Y)	1	D9	583728001	Key (U ..)	1
B10	583734001	Key (! ?)	1	D10	583264001	Key (I)	1
B11	583361001	Key (; ,)	1	D11	583265001	Key (O)	1
B12	583362001	Key (: ;)	1	D12	583266001	Key (P)	1
				D13	583729001	Key (' ')	1
C3	583534001	Key (Q)	1	D14	583730001	Key (^ ~ `)	1
C4	583274001	Key (S)	1				
C5	583275001	Key (D)	1	E2	583606001	Key (* 1)	1
C6	583276001	Key (F)	1	E3	583717001	Key (+ 2)	1
C7	583277001	Key (G)	1	E4	583718001	Key (= 3)	1
C8	583278001	Key (H)	1	E5	583719001	Key (" 4)	1
C9	583279001	Key (J)	1	E6	583720001	Key ((5)	1
C10	583280001	Key (K)	1	E7	583721001	Key () 6)	1
C11	583281001	Key (L)	1	E8	583344001	Key (/ 7)	1
C12	583535001	Key (M)	1	E9	583722001	Key (% 8)	1
C13	583731001	Key (ç ß)	1	E10	583723001	Key (& 9)	1
C14	583732001	Key (— -)	1	E11	583724001	Key (0)	1
				E12	583725001	Key (£ \$)	1
				E13	583726001	Key (a q = i)	1

KEY TOP (LATIN & GREEK)

Model: EM-80

MAIN-
REF. NO.

ZZ-15XQ



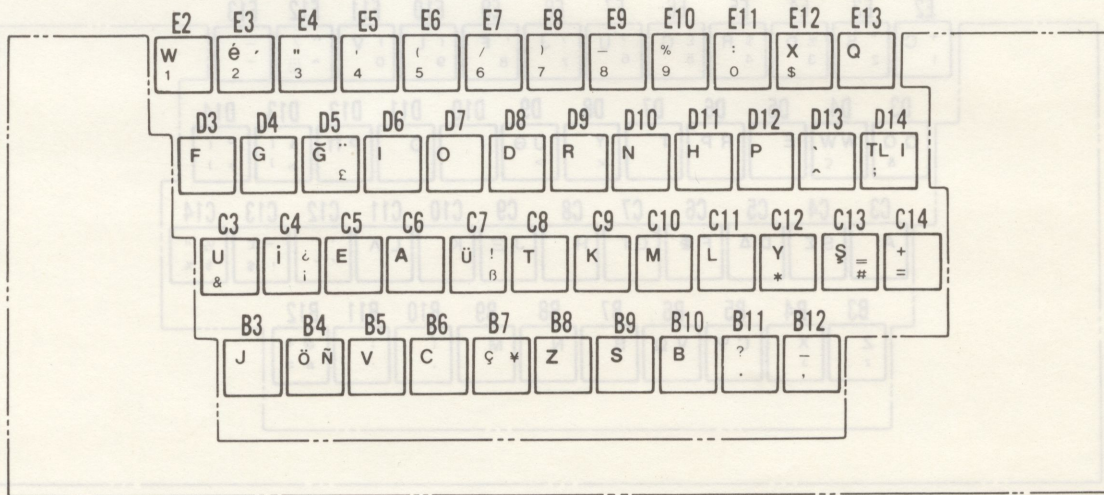
SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	583775001	Key (Z ²)	1	D3	583758001	Key (Q Q &)	1
B4	583776001	Key (X ³)	1	D4	583759001	Key (W W ξ)	1
B5	583777001	Key (C Ψ)	1	D5	583259001	Key (E)	1
B6	583778001	Key (V Ω)	1	D6	583760001	Key (R P)	1
B7	583292001	Key (B)	1	D7	583261001	Key (T)	1
B8	583293001	Key (N)	1	D8	583761001	Key (Y <)	1
B9	583294001	Key (M)	1	D9	583762001	Key (U > θ)	1
B10	583779001	Key (: ,)	1	D10	583264001	Key (I)	1
B11	583780001	Key (; .)	1	D11	583265001	Key (O)	1
B12	583781001	Key (# # + =)	1	D12	583763001	Key (P Π)	1
				D13	583764001	Key (& ζ [])	1
				D14	583765001	Key (° * ())	1
C3	583273001	Key (A)	1	E2	583747001	Key (+ 1 C)	1
C4	583766001	Key (S σ)	1	E3	583748001	Key (" 2 S)	1
C5	583767001	Key (D Δ)	1	E4	583749001	Key (% 3 D)	1
C6	583768001	Key (F Φ)	1	E5	583750001	Key (\$ 4 R)	1
C7	583769001	Key (G Γ)	1	E6	583751001	Key (£ 5 G)	1
C8	583278001	Key (H)	1	E7	583752001	Key (? 6 U)	1
C9	583770001	Key (J Ξ)	1	E8	583753001	Key (/ 7 J)	1
C10	583280001	Key (K)	1	E9	584754001	Key (' 8 F)	1
C11	583771001	Key (L Λ)	1	E10	583755001	Key ((9 L)	1
C12	583772001	Key (` ' " ")	1	E11	583756001	Key () 0 V)	1
C13	583773001	Key (= ! £ \$)	1	E12	583757001	Key (" ^ / ~)	1
C14	583774001	Key (½ \$ " %)	1	E13	583565001	Key (_ -)	1

KEY TOP (TURKISH)

Model: EM-80

MAIN-
REF. NO.

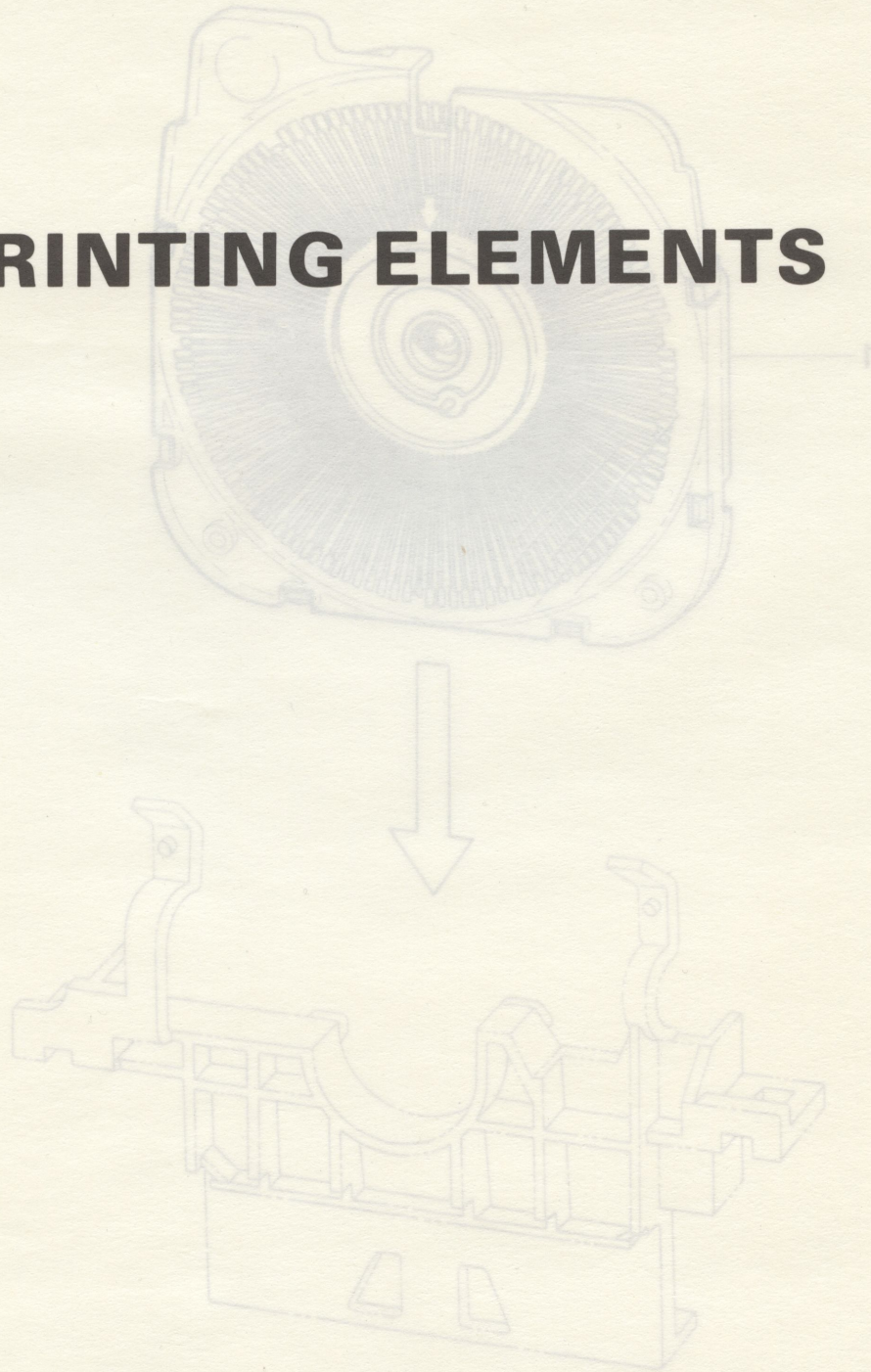
ZZ-15XR



SUB-REF. NO.	CODE	NAME	Q'TY	SUB-REF. NO.	CODE	NAME	Q'TY
B3	584168001	Key (J)	1	D3	584153001	Key (F)	1
B4	584169001	Key (Ö Ñ)	1	D4	584154001	Key (G)	1
B5	584170001	Key (V)	1	D5	584155001	Key (Ğ " £)	1
B6	583290001	Key (C)	1	D6	583264001	Key (I)	1
B7	583733001	Key (Ç ¥)	1	D7	583265001	Key (O)	1
B8	583595001	Key (Z)	1	D8	584156001	Key (D)	1
B9	584171001	Key (S)	1	D9	583260001	Key (R)	1
B10	583292001	Key (B)	1	D10	584157001	Key (N)	1
B11	584172001	Key (? .)	1	D11	584158001	Key (H)	1
B12	584173001	Key (- ,)	1	D12	583266001	Key (P)	1
				D13	584159001	Key (^ ^)	1
				D14	584160001	Key (TL ;)	1
C3	584161001	Key (U &)	1	E2	584142001	Key (W 1)	1
C4	584162001	Key (İ i)	1	E3	584143001	Key (é 2)	1
C5	584163001	Key (E)	1	E4	584144001	Key (" 3)	1
C6	583273001	Key (A)	1	E5	584145001	Key (' 4)	1
C7	584164001	Key (Ü ü)	1	E6	583720001	Key ((5)	1
C8	584165001	Key (T)	1	E7	584146001	Key (/ 6)	1
C9	583280001	Key (K)	1	E8	584147001	Key () 7)	1
C10	583535001	Key (M)	1	E9	584148001	Key (_ 8)	1
C11	583281001	Key (L)	1	E10	584149001	Key (% 9)	1
C12	584166001	Key (Y *)	1	E11	584150001	Key (: 0)	1
C13	584167001	Key (Ş #)	1	E12	584151001	Key (X \$)	1
C14	583615001	Key (+ =)	1	E13	584152001	Key (Q)	1

MAIN- REF. NO.	TC-003
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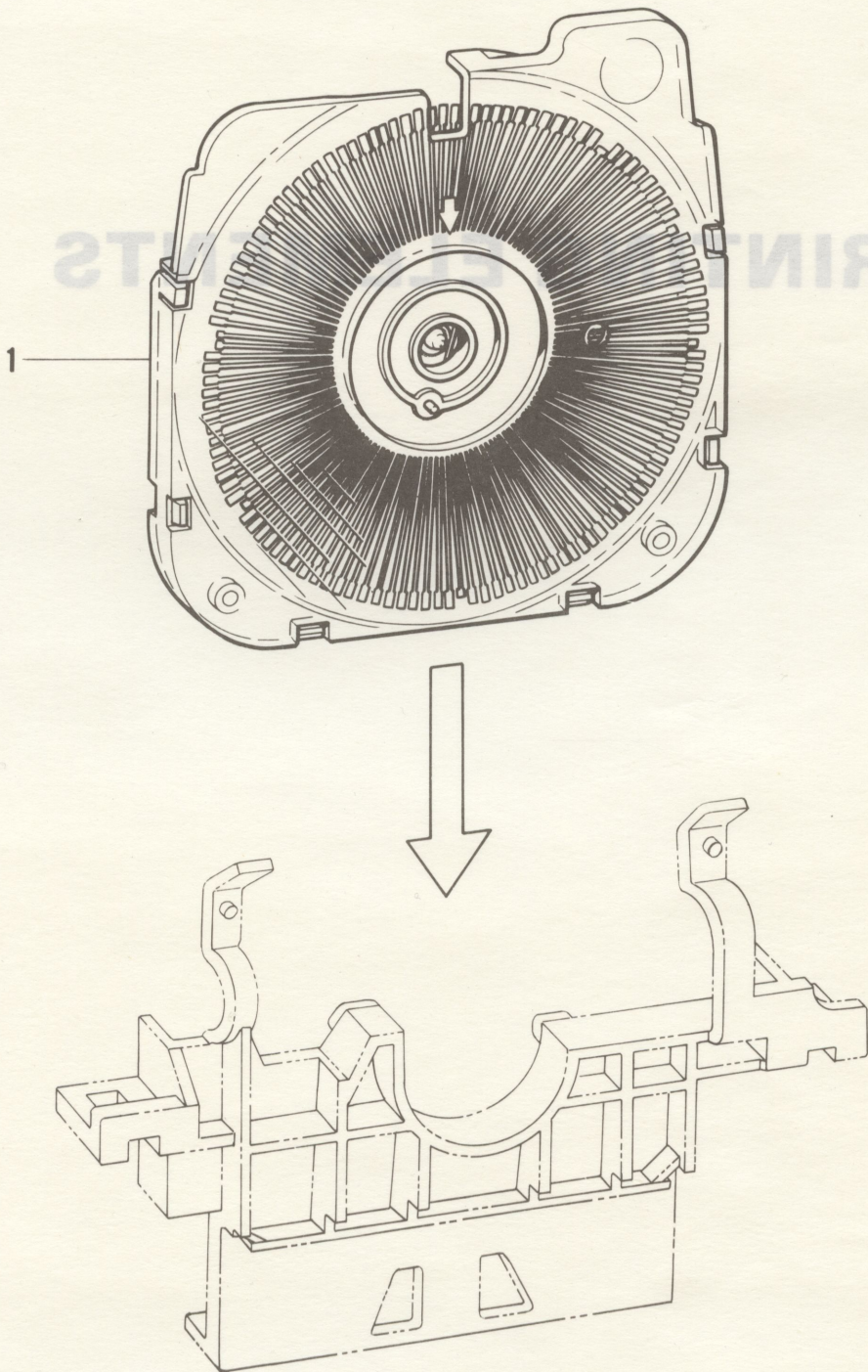
PRINTING ELEMENTS



PRINTING ELEMENT

Model: EM-80

MAIN- REF. NO.	TC-002
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-002	Functional group name	PRINTING ELEMENT			
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PR FRC
1		Printing Element	1			

SPECIAL PARTS

	QUADRO 1012	PRESTIGE 1012	QUADRO 15	SCRIPT 1012	P. ITALIC 1012	PICA 10	GRAND 10
	CODE	CODE	CODE	CODE	CODE	CODE	CODE
A. ENGLISH (U.S.A. only)	572130001	572132001	572134001	572136001	572409001	572415001	572459001
GERMAN	572138001	572140001	572182001	572184001	572411001	572419001	572461001
K. ENGLISH	572186001	572188001	572190001	572192001	572421001	572441001	572463001
A. ENGLISH (Others)	572329001	572331001	572333001	572335001	572413001	572417001	572465001
BILINGUAL	572337001	572339001	572341001	572343001	572423001	572443001	572467001
FRENCH	572345001	572347001	572349001	572351001	572425001	572445001	572469001
DUTCH	572353001	572355001	572357001	572359001	572427001	572447001	
NORWEGIAN/DANISH	572361001	572361001	572365001	572365001	572429001	572449001	572471001
S. ^{South} _{Central} AMERICAN	572369001	572371001	572373001	572375001	572431001	572451001	572473001
SWISS	572377001	572379001	572381001	572383001	572433001	572453001	572475001
ITALIAN	572385001	572387001	572389001	572391001	572435001	572455001	572477001
S. SPAIN	572393001	572395001	572397001	572399001	572437001		572479001
FINNISH/SWEDISH	572401001	572403001	572405001	572407001	572439001	572457001	572481001
SOUTH-AFRICAN	573531001	573527001	573535001	573539001	573543001	573630001	573635001
PORTUGUESE	573533001	573529001	573537001	573541001	573545001		
DANISH							
SWEDISH							
LATIN	573733001				573729001	573720001	
GREEK						573716001	
INTERNATIONAL (U.S.A.)		573856001	573862001				
INTERNATIONAL (Others)		573858001	573864001				

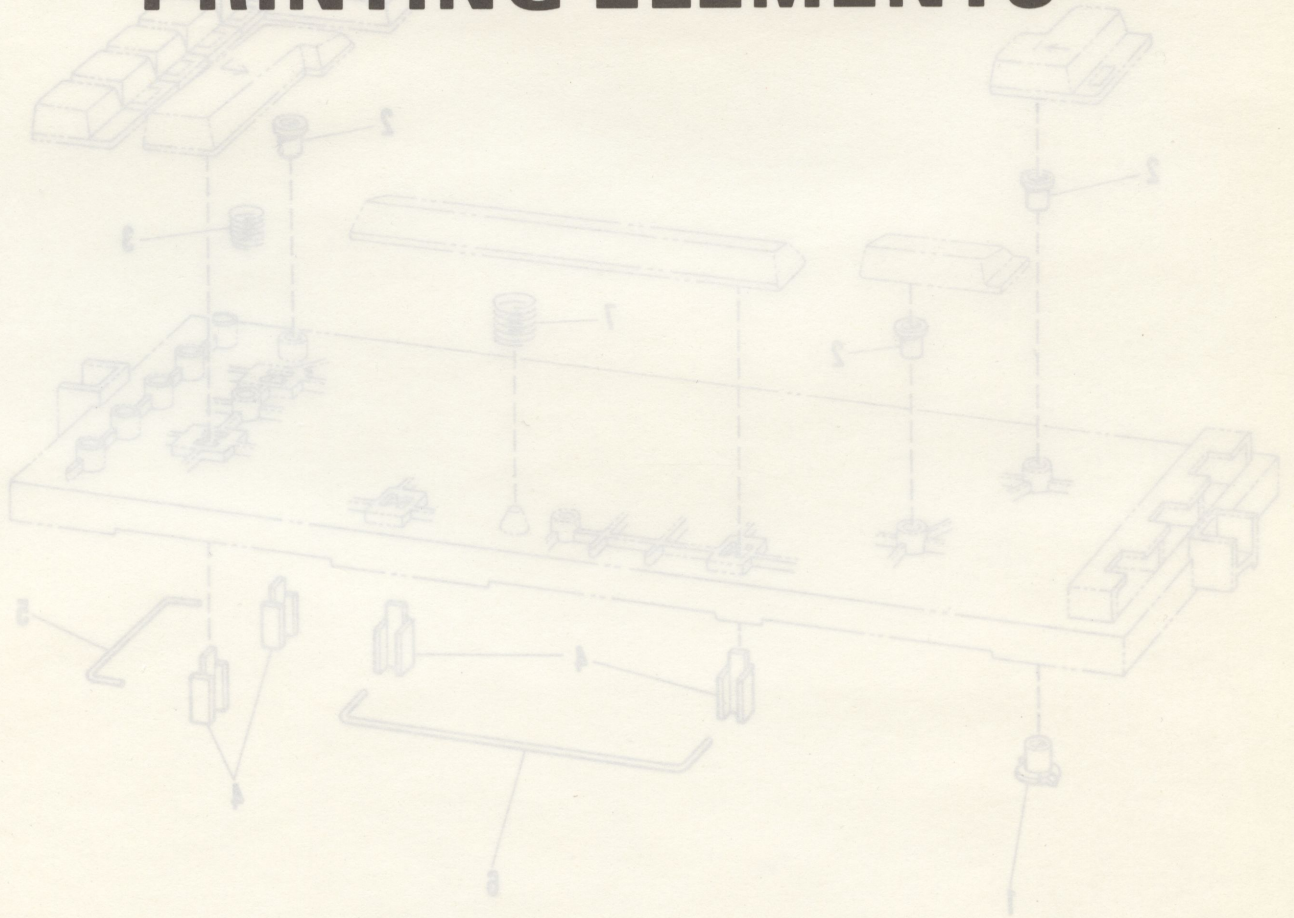
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

DUCTION		REMARK
UP TO		

ELITE 12	BROUGHAM 10	BROUGHAM 12	OCR-B	SYMBOL 10	LETTER GOTHIC 12	OCR-A 10	G. ITALIC 1012	ANELIA P.S	SUPER GRANDE 10
CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE	CODE
572483001	572593001	572841001	572967001	573574001	573682001	573640001		573608001	573901001
572485001	573891001	573038001	572965001	573291001	573684001			573606001	573905001
572487001	572893001	573040001	572970001	573578001	573690001			573779001	573907001
572489001	572897001	573036001	573034001	573580001	573686001	573647001		573781001	573909001
572491001	572905001	573402001	572982001	573582001	573692001			573783001	573911001
572493001	572895001	573042001	573568001	573584001	573694001			573785001	573913001
572495001	572887001	573044001	572974001	573586001	573696001			573787001	573915001
572497001	572899001	573046001	572976001	573588001	573698001			573789001	573917001
572499001	572901001	573048001	572978001	573590001	573700001			573791001	573419001
572587001	572903001	573050001	572980001	573592001	573702001			573793001	573921001
572589001	572907001	573404001	572984001	573594001	573704001			573795001	573923001
	572909001			573596001	573706001			573797001	593925001
572591001	572911001	573408001	573408001	573598001	573708001			573799001	573927001
	573551001	573555001		573600001	573710001			573801001	573929001
				573611001	573712001			573803001	573931001
				573623001					
				573625001					
								573866001	
							573724001		
	573563001			573866001				573866001	
	573860001			573872001				573868001	

MAIN- REF. NO.	TC-003
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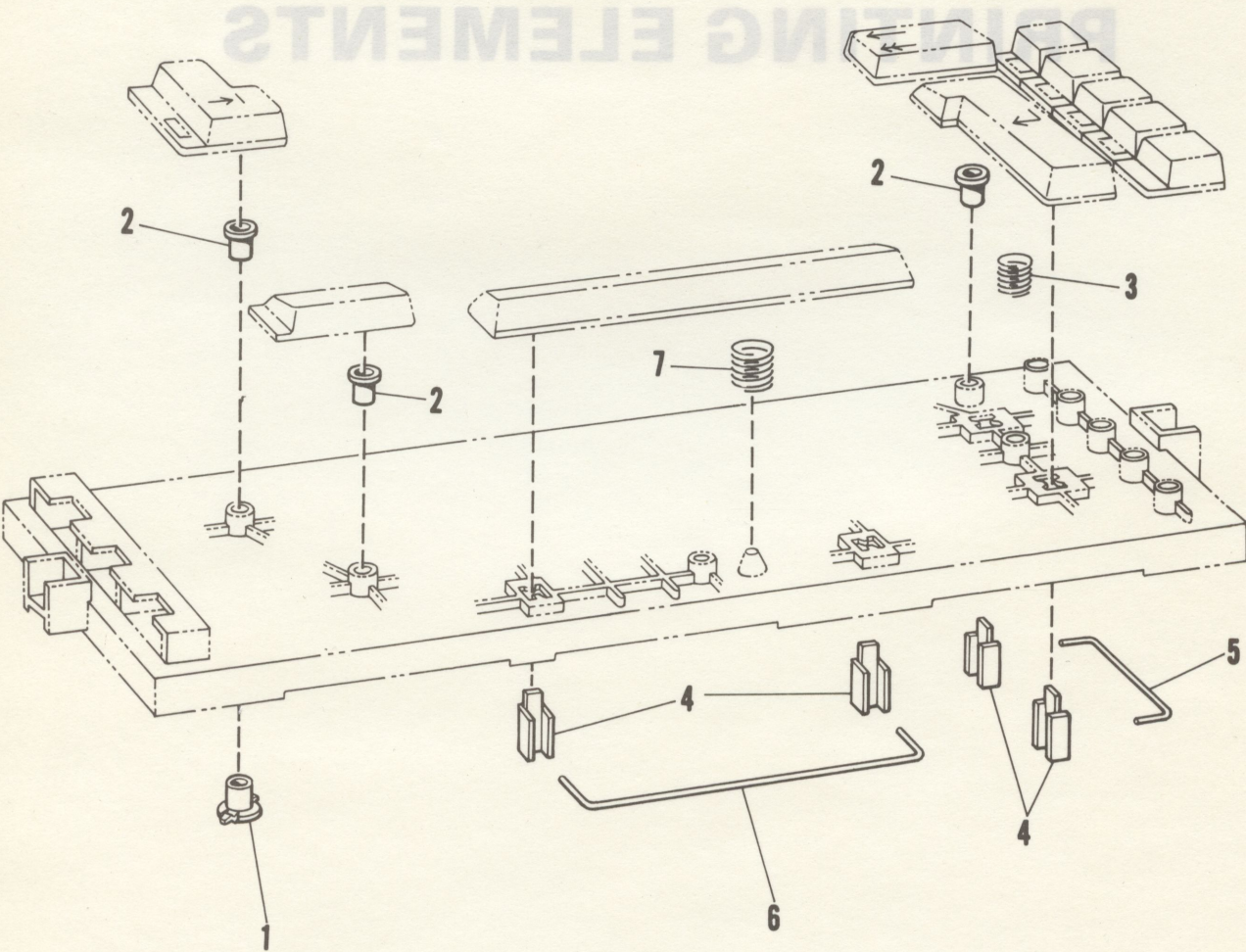
PRINTING ELEMENTS



KEY TOP ATTACHMENT

Model: EM-80

MAIN- REF. NO.	TC-003
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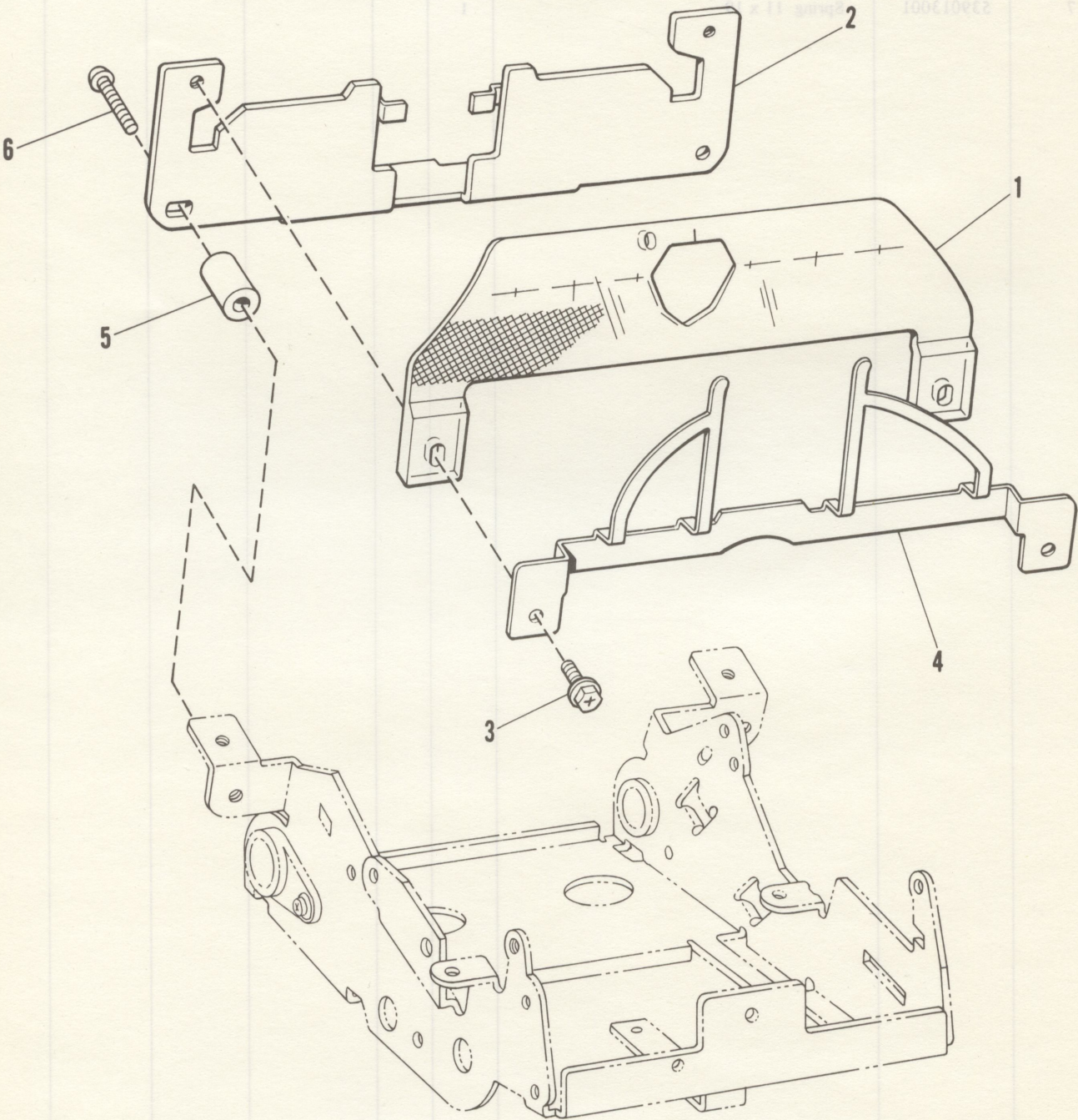
Model: EM-80

610-114-252

PAPER METER

Model: EM-80

MAIN-REF. NO.	TC-016
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PARTS CODE & PARTS NAME

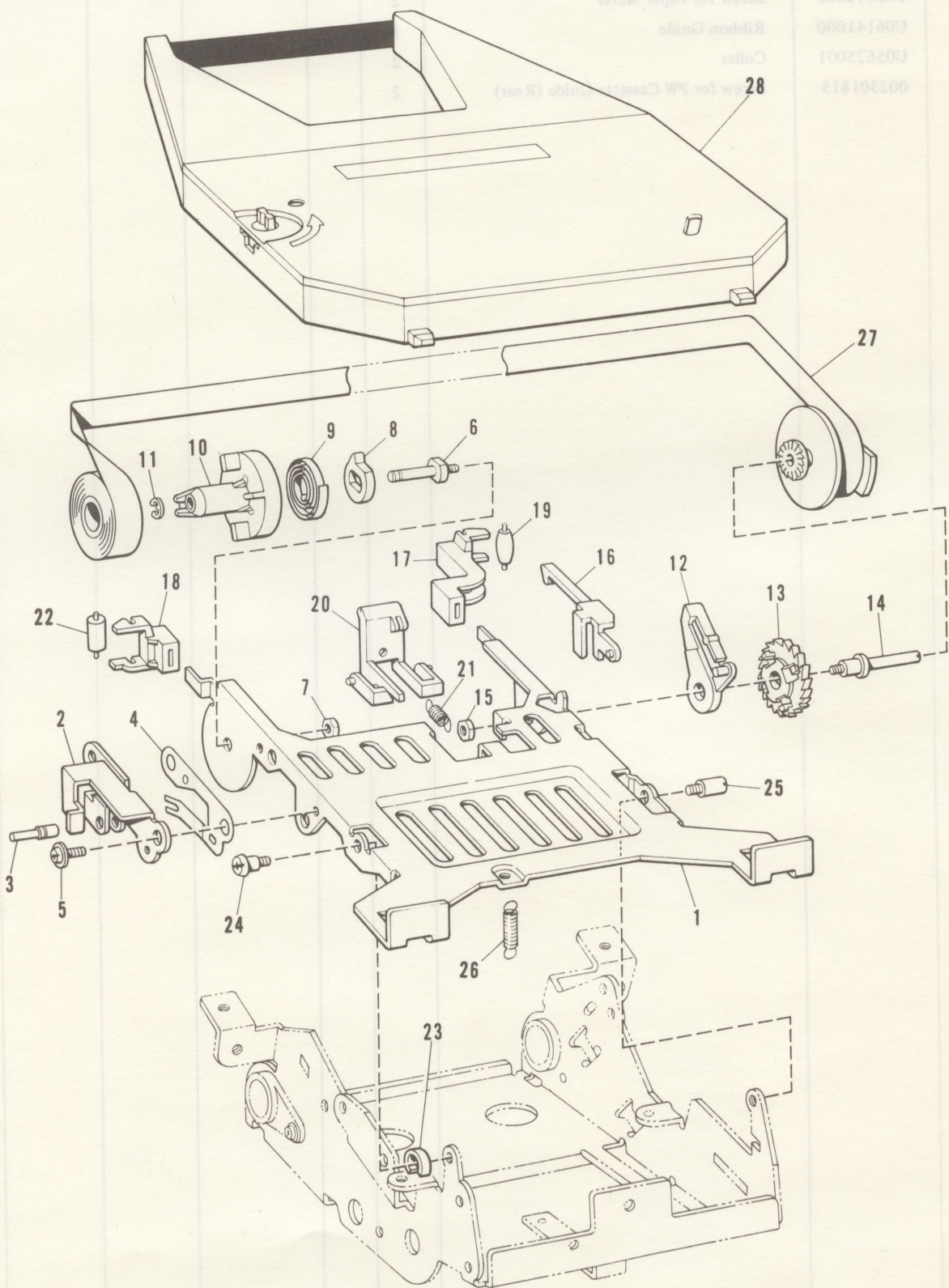
Model: EM-80

MAIN-REF. NO.	TC-016	Functional group name	PAPER METER					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	U06379001	Paper Meter	1					
2	576732001	PW Cassette Guide (Rear)	1					
3	U05472001	Screw for Paper Meter	2					
4	U06141000	Ribbon Guide	1					
5	U05625001	Collar	2					
6	002301815	Screw for PW Cassette Guide (Rear)	2					

RIBBON FEED MECHANISM

Model: EM-80

MAIN- REF. NO.	TC-017
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PARTS CODE & PARTS NAME

Model: EM-80

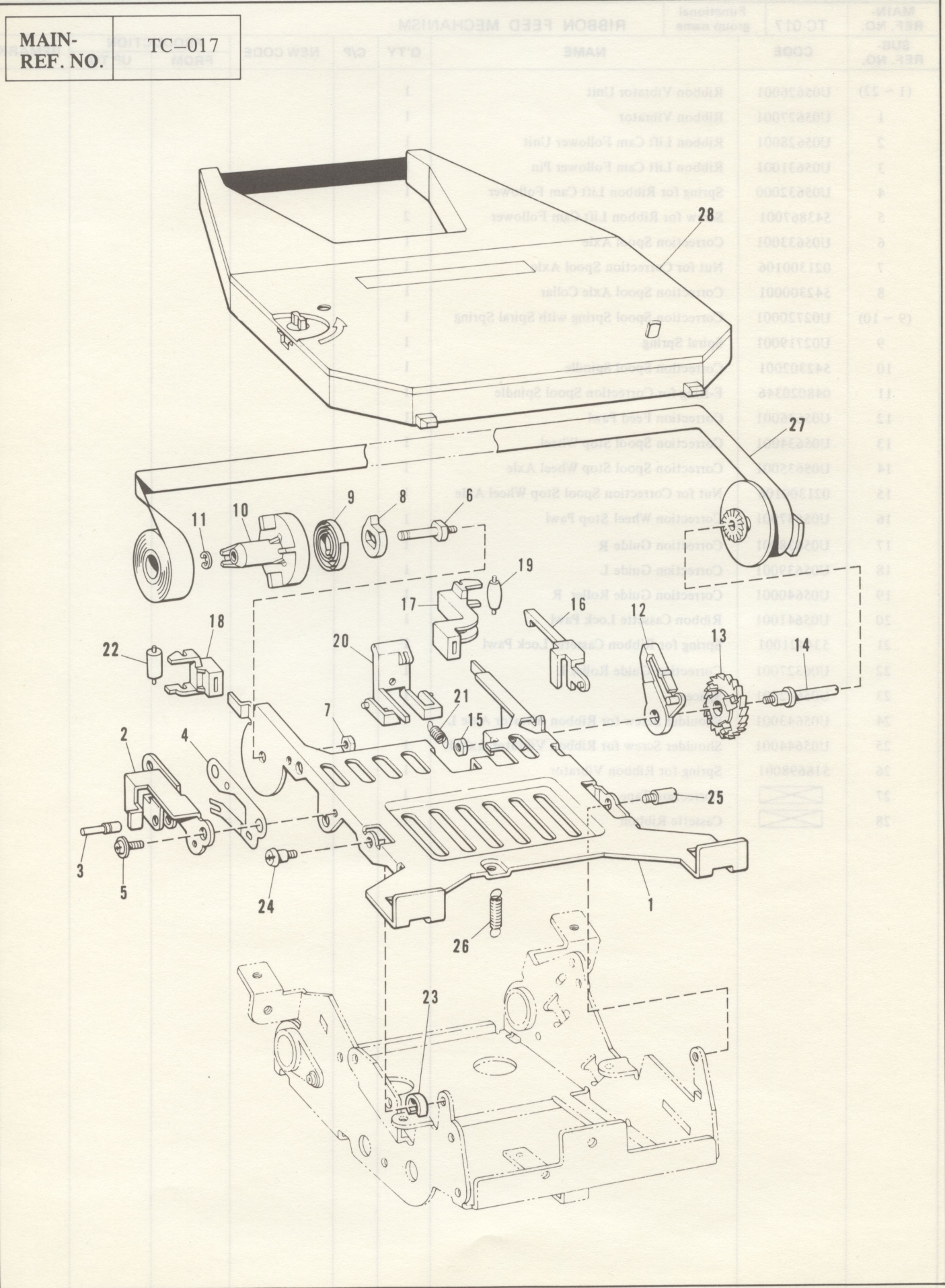
MAIN-REF. NO.		TC-017	Functional group name	RIBBON FEED MECHANISM					PRODUCTION		REMARK
SUB-REF. NO.	CODE	NAME		Q'TY	C/P	NEW CODE	FROM	UP TO			
(1 ~ 22)	U05626001	Ribbon Vibrator Unit		1							
1	U05627001	Ribbon Vibrator		1							
2	U05628001	Ribbon Lift Cam Follower Unit		1							
3	U05631001	Ribbon Lift Cam Follower Pin		1							
4	U05632000	Spring for Ribbon Lift Cam Follower		1							
5	543867001	Screw for Ribbon Lift Cam Follower		2							
6	U05633001	Correction Spool Axle		1							
7	021300106	Nut for Correction Spool Axle		1							
8	542300001	Correction Spool Axle Collar		1							
(9 ~ 10)	U02720001	Correction Spool Spring with Spiral Spring		1							
9	U02719001	Spiral Spring		1							
10	542302001	Correction Spool Spindle		1							
11	048020346	E-Ring for Correction Spool Spindle		1							
12	U05636001	Correction Feed Pawl		1							
13	U05634001	Correction Spool Stop Wheel		1							
14	U05635001	Correction Spool Stop Wheel Axle		1							
15	021300106	Nut for Correction Spool Stop Wheel Axle		1							
16	U05637001	Correction Wheel Stop Pawl		1							
17	U05638001	Correction Guide R		1							
18	U05639001	Correction Guide L		1							
19	U05640001	Correction Guide Roller R		1							
20	U05641001	Ribbon Cassette Lock Pawl		1							
21	534421001	Spring for Ribbon Cassette Lock Pawl		1							
22	U06327001	Correction Guide Roller L		1							
23	U05642001	Spacer		1							
24	U05643001	Shoulder Screw for Ribbon Bivibrator Axle L		1							
25	U05644001	Shoulder Screw for Ribbon Vibrator Axle R		1							
26	516698001	Spring for Ribbon Vibrator		1							
27		Correction Tape		1							
28		Cassette Ribbon		1							

Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-017

RIBBON FEED MECHANISM

Model: EM-80



PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-017	Functional group name	RIBBON FEED MECHANISM
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SPECIAL PARTS

NAME CODE COLOR & DESCRIPTION	Correction Tape (Lift-off Tape)		Correction Tape (Cover-up Tape)									
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE
Others, Europe	27A	542543001	27A	542804001								
U.S.A.	27B	542708001	27B	542803001								
CANADA	27C	544784001	27C	544788001								

NAME CODE COLOR & DESCRIPTION	Cassette Ribbon (Correctable Film)		Cassette Ribbon (Multi Strike Film)		Cassette Ribbon (One-Time Film)		Cassette Ribbon (Nylon)					
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE
Black (Others, Europe)	28A	575484001	28A	575488001	28A	575492001	28A	575496001				
Black (u.S.A.)	28B	576510001	28B	576514001	28B	576518001	28B	576522001				
Black (CANADA)	28C	575476001	28C	575480001	28C	576501001	28C	576505001				

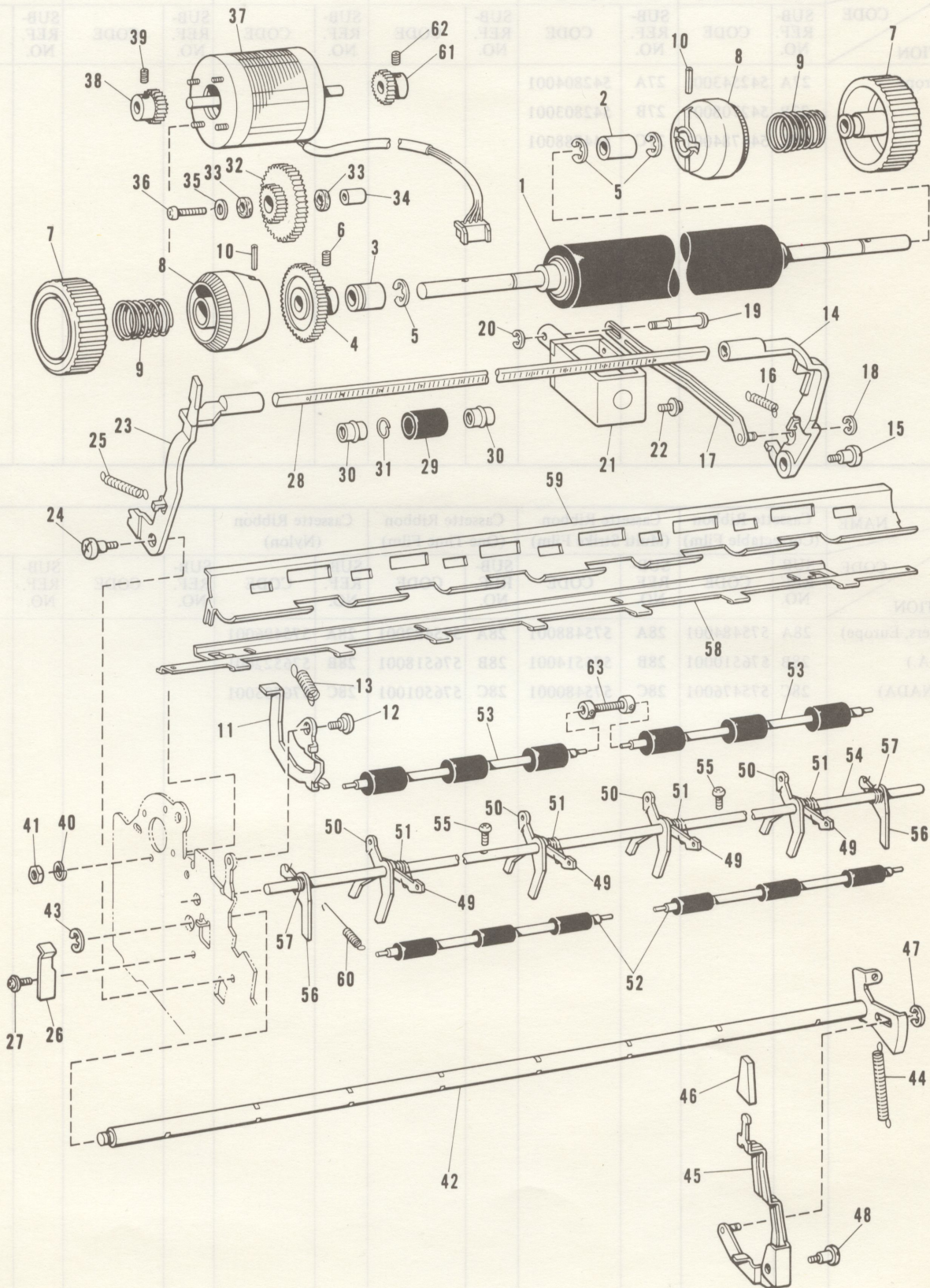
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-017

PLATEN MECHANISM

Model: EM-80

MAIN-REF. NO.	TC-031
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-031	Functional group name	PLATEN MECHANISM					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
(1 ~ 10)	575054001	Platen Unit	1					
1	575055001	Platen	1					
2	571940001	Platen Bearing R	1					
3	575059000	Platen Bearing L	1					
4	575060001	Platen Gear	1					
5	048070346	E-Ring for Platen Bearing RL	3					
6	014400420	Set Screw for Platen Gear	2					
7	575061001	Platen Knob	2					
8	575062001	Platen Rotation Knob	2					
9	575063001	Compressed Spring	2					
10	047202042	Spring Pin	2					
11	575064001	Platen Holder	2					
12	522542001	Screw for Platen Holder	2					
13	544629001	Spring for Platen Holder	2					
14	575066001	Paper Bail Arm R	1					
15	575067001	Screw for PB Arm R	1					
16	542936001	Spring for PB Arm R	1					
17	575068001	Paper Bail Operation Bar	1					
18	048030346	E-Ring for PB Operation Bar	1					
19	575072001	Paper Bail Operation Shaft	1					
20	048030346	E-Ring for PB Operation Shaft	1					
21	576811001	Paper Bail Solenoid Unit	1					
22	571823001	Screw for PB Solenoid Unit	2					
23	575074001	Paper Bail Arm L	1					
24	575067001	Screw for PB Arm L	1					
25	543298001	Spring for PB Arm L	1					
26	575075001	Paper Bail Plate Spring	1					
27	541928001	Screw for PB Plate Spring	1					
28	576809001	Paper Bail Scale	1					
29	575078001	Paper Bail Roller	3					
30	575079001	Paper Bail Roller Shaft	6					
31	575080001	Paper Bail Roller Set Spring	3					
32		Line Feed Intermediate Gear	1					
33	575082001	LF Intermediate Gear Felt	1					
34	575083000	LF Intermediate Gear Collar	1					
35	025040333	Washer for LF Intermediate Gear	1					
36	062401616	Screw for LF Intermediate Gear	1					

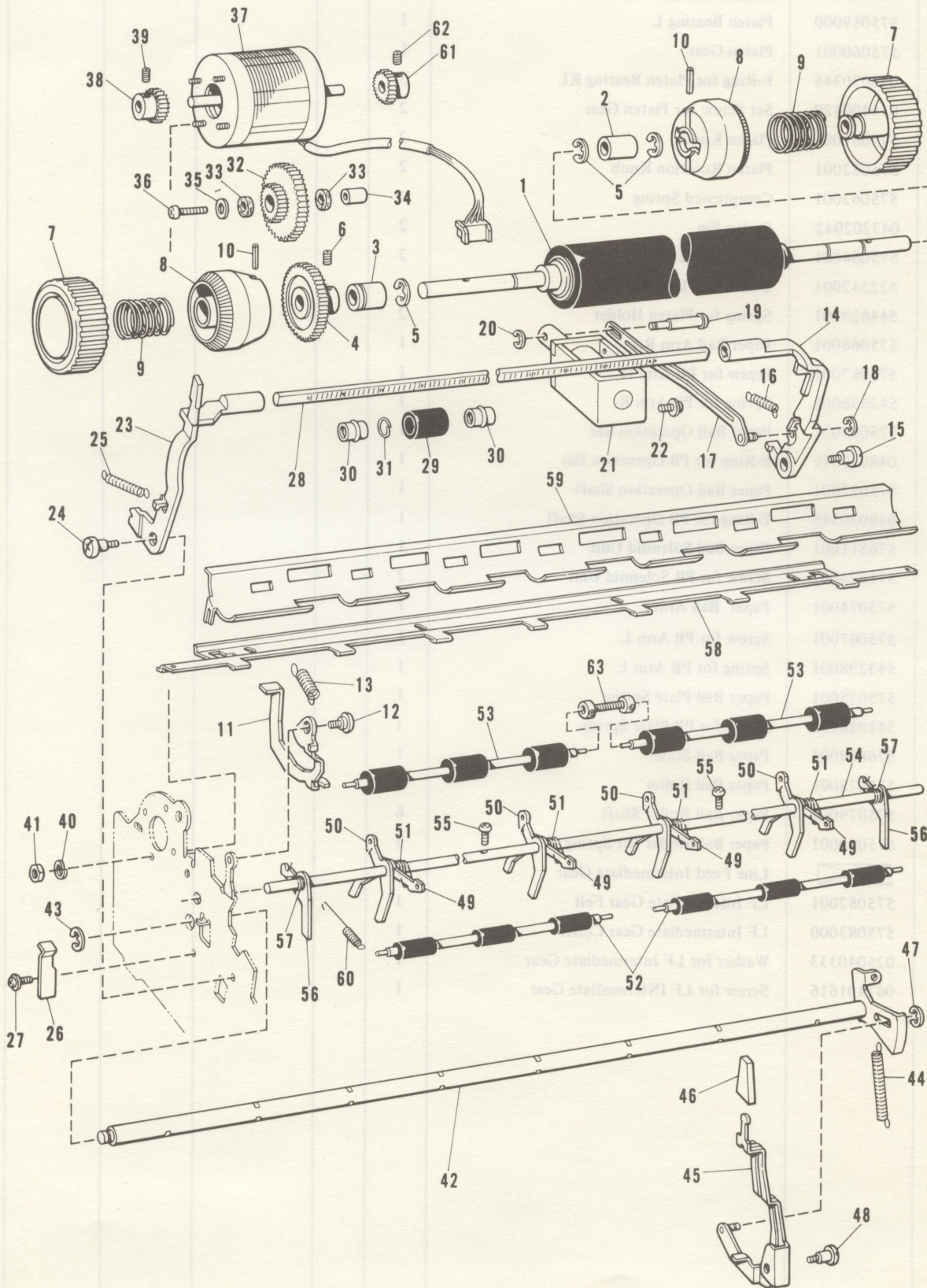
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-031

PLATEN MECHANISM

Model: EM-80

MAIN-REF. NO.	TC-031
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.		TC-031	Functional group name	PLATEN MECHNISM						
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK		
						FROM	UP TO			
37	576734001	Line Feed Motor Unit	1							
38		Line Feed Motor Gear	1							
39	014400420	Set Screw for LF Motor Gear	2							
40	028030243	Spring Washer for LF Motor	4							
41	021300106	Nut for LF Motor	4							
42	576301001	Cam Shaft	1							
43	048060346	E-Ring for Cam-Shaft	1							
44	541553001	Spring	1							
45	575088001	Paper Release Lever	1							
46	575091001	Paper Release Lever Knob	1							
47	048040346	E-Ring for PR Lever	1							
48	575092001	Screw for PR Lever	1							
49	575094001	Paper Feed Roller Arm Front	4							
50	575095001	Paper Feed Roller Arm Rear	4							
51	575242001	Torsion Spring for PF Roller Arm	4							
52	571705001	Paper Feed Roller Front	2							
53	571708001	Paper Feed Roller Rear	2							
54	575096001	Paper Feed Roller Arm Shaft	1							
55	533413001	Screw for PFR Arm Shaft	2							
56	575097001	Paper Stopper Arm	2							
57	575243001	Torsion Spring for PS Arm	2							
58	575098001	Paper Stopper	1							
59	575099001	Paper Pan	1							
60	576554001	Spring for PF Roller Arm Front	4							
61	575341001	Line Feed Motor Gear SF	1							
62	014400420	Set Screw for LF Motor Gear SF	2							
63	575410001	Paper Feed Roller Connector	1							

SPECIAL PARTS

NAME COLOR & DESCRIPTION	Line Feed Inter- mediate Gear		Line Feed Motor Gear									
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE
Italy only	32A	575370001	38A	575371001								
Others	32B	575081001	38B	575084001								

Caution: To visualize the  part and ordering procedures, please refer to the Preface.

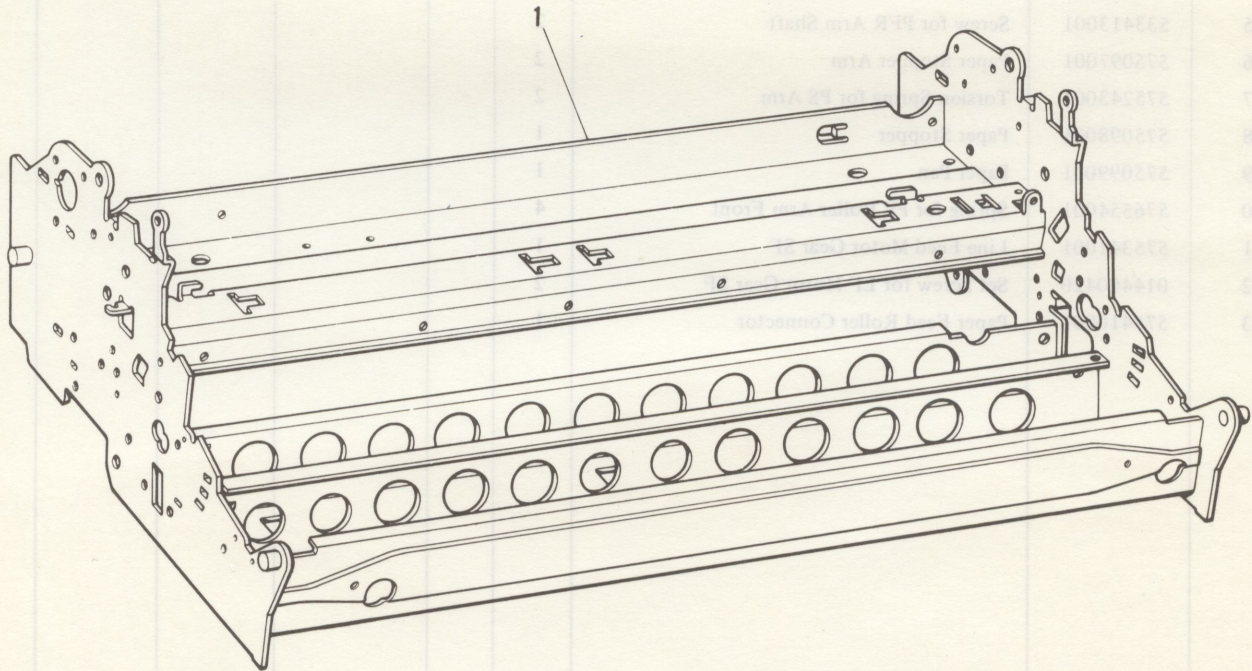
535-411-031

PARTS CODE & PARTS NAME
CHASSIS

Model: EM-80

Model: EM-80

MAIN- REF. NO.	TC-033
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SPECIAL PARTS

NAME		Line Feed Inter- mediate Gear		Line Feed Motor Gear		COLOR & DESCRIPTION	
		SUB- REF. NO.	CODE	SUB- REF. NO.	CODE		
		32A	275370001	38A	275371001	Reddy only	
		32B	275081001	38B	275084001		

PARTS CODE & PARTS NAME

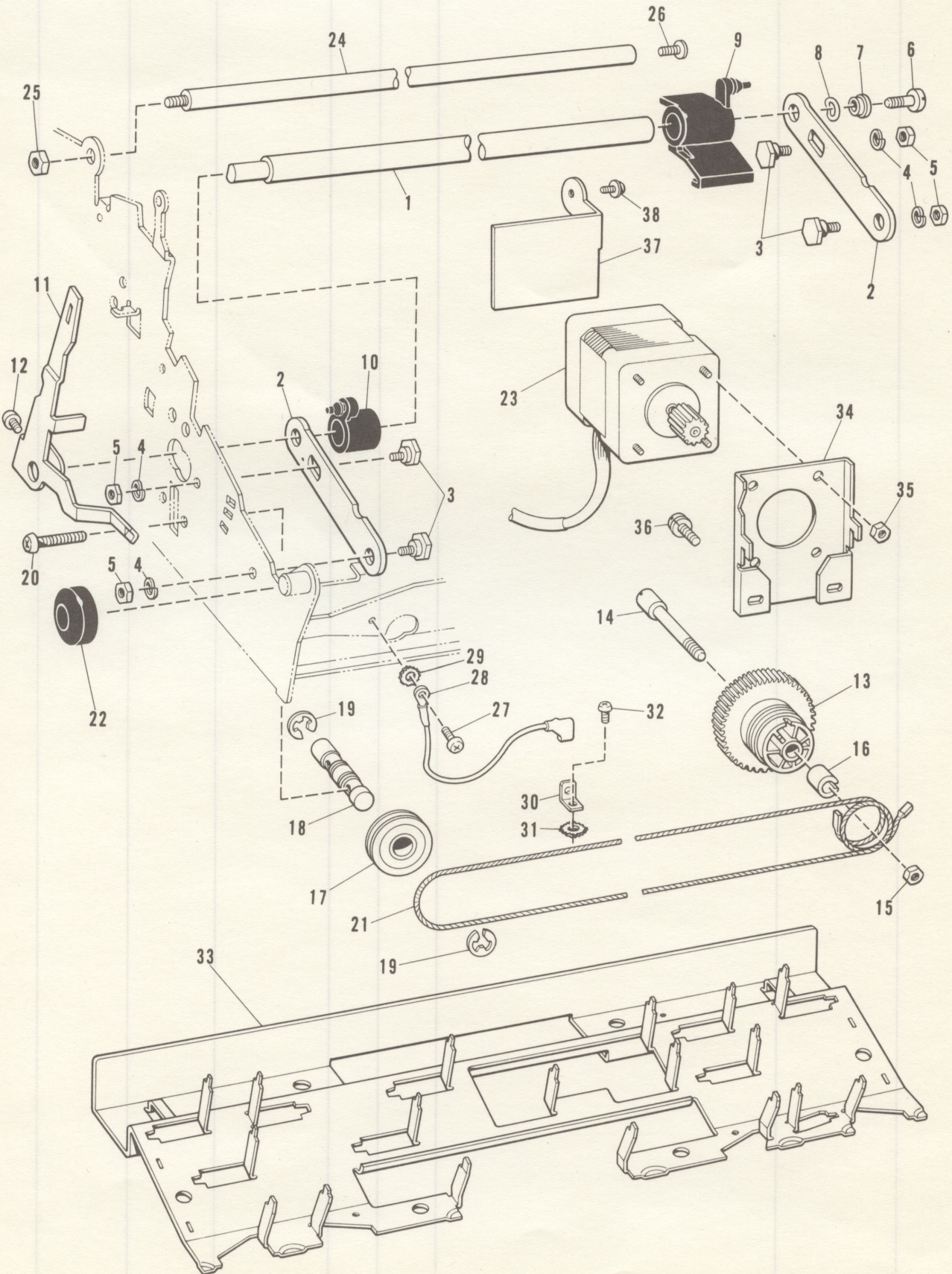
Model: EM-80

MAIN-REF. NO.	TC-033	Functional group name	CHASSIS					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	576808001	Chassis Unit	1					

CHASSIS ATTACHMENT

Model: EM-80

MAIN-REF. NO.	TC-034
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PARTS CODE & PARTS NAME

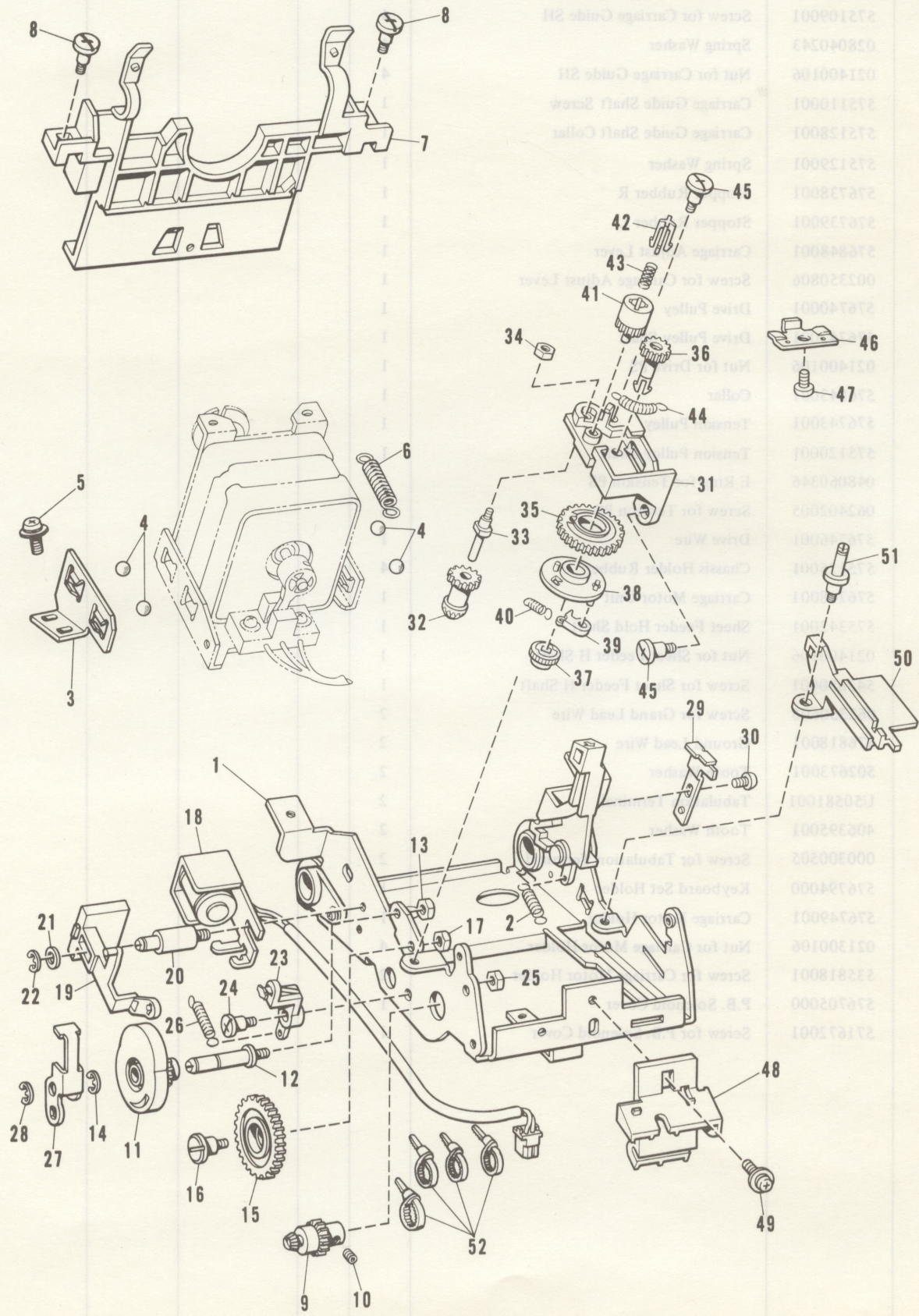
Model: EM-80

MAIN-REF. NO.	TC-034	Functional group name	CHASSIS ATTACHMENT					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	575107001	Carriage Guide Shaft	1					
2	576847001	Carriage Guide Shaft Holder	2					
3	575109001	Screw for Carriage Guide SH	4					
4	028040243	Spring Washer	4					
5	021400106	Nut for Carriage Guide SH	4					
6	575110001	Carriage Guide Shaft Screw	1					
7	575128001	Carriage Guide Shaft Collar	1					
8	575129001	Spring Washer	1					
9	576738001	Stopper Rubber R	1					
10	576739001	Stopper Rubber L	1					
11	576848001	Carriage Adjust Lever	1					
12	002350806	Screw for Carriage Adjust Lever	1					
13	576740001	Drive Pulley	1					
14	576742001	Drive Pulley Shaft	1					
15	021400106	Nut for Drive PS	1					
16	576843001	Collar	1					
17	576743001	Tension Pulley	1					
18	575120001	Tension Pulley Shaft	1					
19	048060346	E Ring for Tension PS	2					
20	062402005	Screw for Tension PS	2					
21	576746001	Drive Wire	1					
22	575125001	Chassis Holder Rubber	4					
23	576748001	Carriage Motor Unit	1					
24	575342001	Sheet Feeder Hold Shaft	1					
25	021400106	Nut for Sheet Feeder H Shaft	1					
26	543850001	Screw for Sheet Feeder H Shaft	1					
27	062350605	Screw for Grand Lead Wire	2					
28	576818001	Ground Lead Wire	2					
29	502673001	Tooth Washer	2					
30	U50581001	Tabulation Terminal	2					
31	406395001	Tooth Washer	2					
32	000300505	Screw for Tabulation Terminal	2					
33	576794000	Keyboard Set Holder	1					
34	576749001	Carriage Motor Holder	1					
35	021300106	Nut for Carriage Motor Holder	4					
36	535818001	Screw for Carriage Motor Holder	2					
37	576705000	P.B. Solenoid Cover	1					
38	571672001	Screw for P.B. Solenoid Cover	1					

CARRIAGE HEAD MECHANISM

Model: EM-80

MAIN-REF. NO.	TC-043
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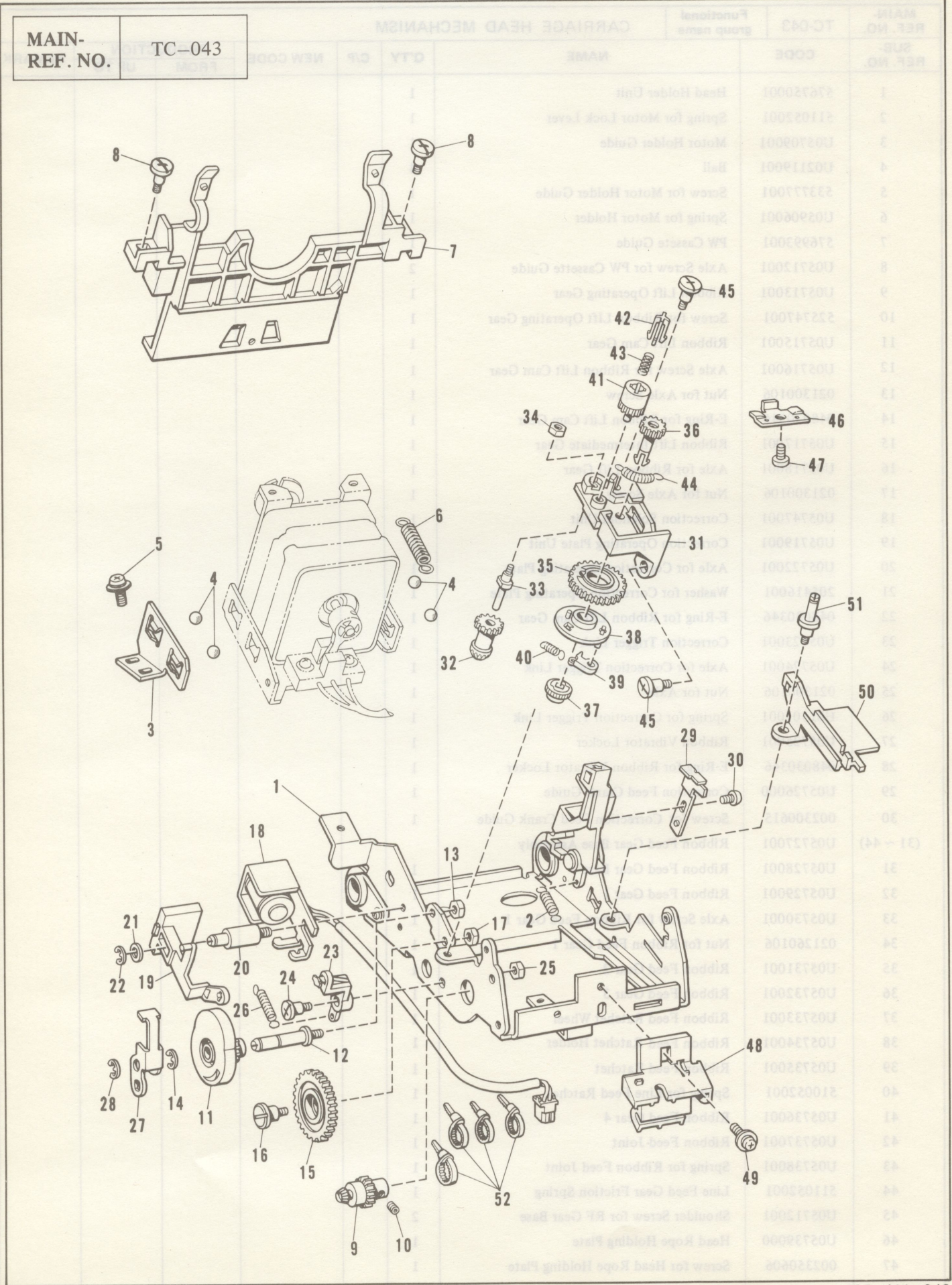
PARTS CODE & PARTS NAME

Model: EM-80

MAIN- REF. NO.	TC-043	Functional group name	CARRIAGE HEAD MECHANISM					
SUB- REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	576750001	Head Holder Unit	1					
2	511052001	Spring for Motor Lock Lever	1					
3	U05709001	Motor Holder Guide	1					
4	U02119001	Ball	4					
5	533777001	Screw for Motor Holder Guide	1					
6	U05906001	Spring for Motor Holder	1					
7	576993001	PW Cassete Guide	1					
8	U05712001	Axle Screw for PW Cassete Guide	2					
9	U05713001	Ribbon Lift Operating Gear	1					
10	525747001	Screw for Ribbon Lift Operating Gear	1					
11	U05715001	Ribbon Lift Cam Gear	1					
12	U05716001	Axle Screw for Ribbon Lift Cam Gear	1					
13	021300106	Nut for Axle Screw	1					
14	048030346	E-Ring for Ribbon Lift Cam Gear	1					
15	U05717001	Ribbon Lift Intermediate Gear	1					
16	U05718001	Axle for Ribbon Lift Gear	1					
17	021300106	Nut for Axle Screw	1					
18	U05747001	Correction Solenoid Unit	1					
19	U05719001	Correction Operating Plate Unit	1					
20	U05722001	Axle for Correction Operating Plate	1					
21	205416001	Washer for Correction Operating Plate	1					
22	048030346	E-Ring for Ribbon Lift Cam Gear	1					
23	U05723001	Correction Trigger Link	1					
24	U05724001	Axle for Correction Trigger Link	1					
25	021300106	Nut for Axle	1					
26	U01501001	Spring for Correction Trigger Link	1					
27	U05725001	Ribbon Vibrator Locker	1					
28	048030346	E-Ring for Ribbon Vibrator Locker	1					
29	U05726000	Correction Feed Crank Guide	1					
30	002300615	Screw for Correction Feed Crank Guide	1					
(31 ~ 44)	U05727001	Ribbon Feed Gear Base Assembly						
31	U05728001	Ribbon Feed Gear Base	1					
32	U05729001	Ribbon Feed Gear 1	1					
33	U05730001	Axle Screw for Ribbon Feed Gear 1	1					
34	021260106	Nut for Ribbon Feed Gear 1	1					
35	U05731001	Ribbon Feed Gear 2	1					
36	U05732001	Ribbon Feed Gear 3	1					
37	U05733001	Ribbon Feed Ratchet Wheel	1					
38	U05734001	Ribbon Feed Ratchet Holder	1					
39	U05735001	Ribbon Feed Ratchet	1					
40	510052001	Spring for Line Feed Ratchet	1					
41	U05736001	Ribbon Feed Gear 4	1					
42	U05737001	Ribbon Feed Joint	1					
43	U05738001	Spring for Ribbon Feed Joint	1					
44	511052001	Line Feed Gear Friction Spring	1					
45	U05712001	Shoulder Screw for RF Gear Base	2					
46	U05739000	Head Rope Holding Plate	1					
47	002350606	Screw for Head Rope Holding Plate	1					

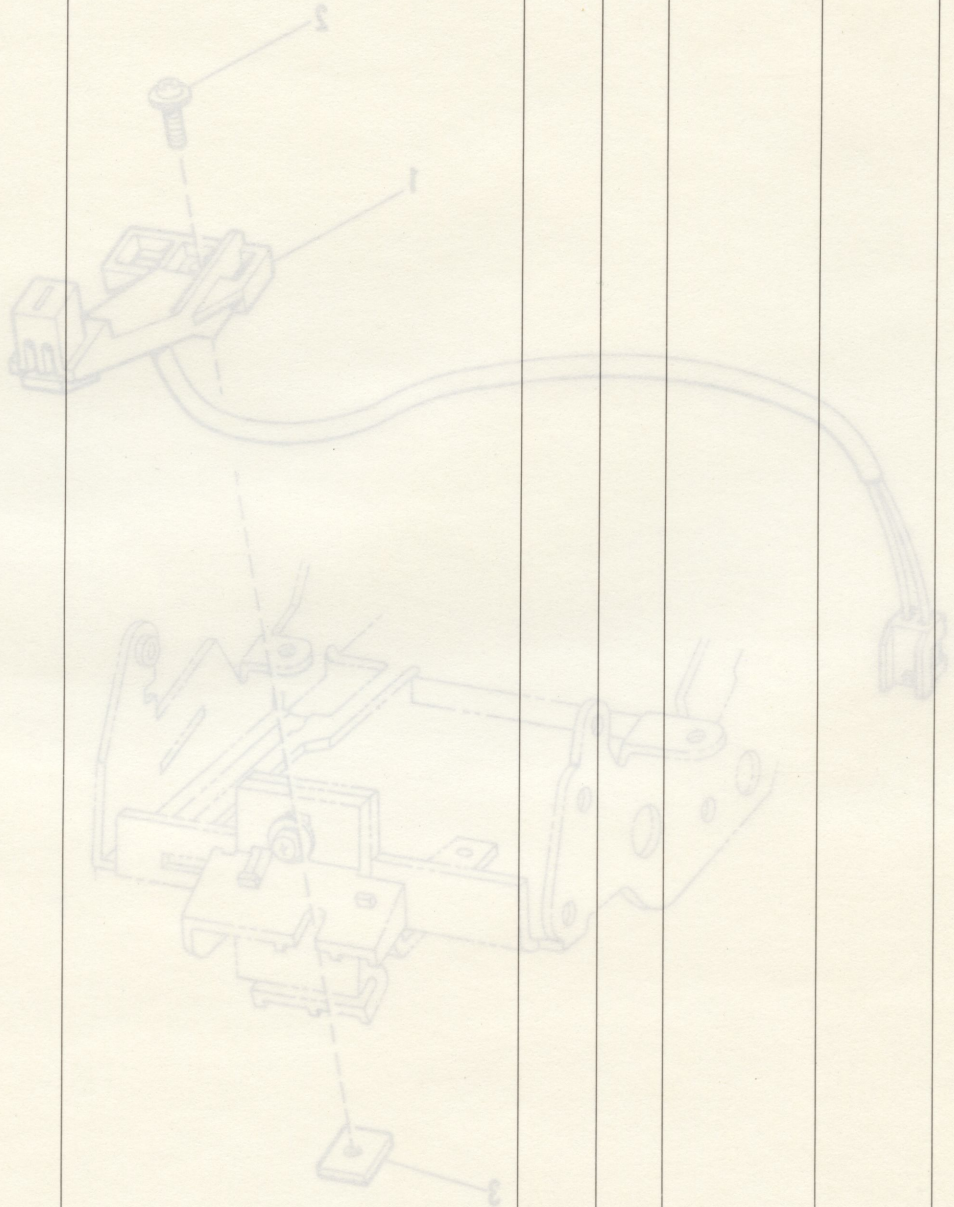
CARRIAGE HEAD MECHANISM

Model: EM-80



PARTS CODE & PARTS NAME

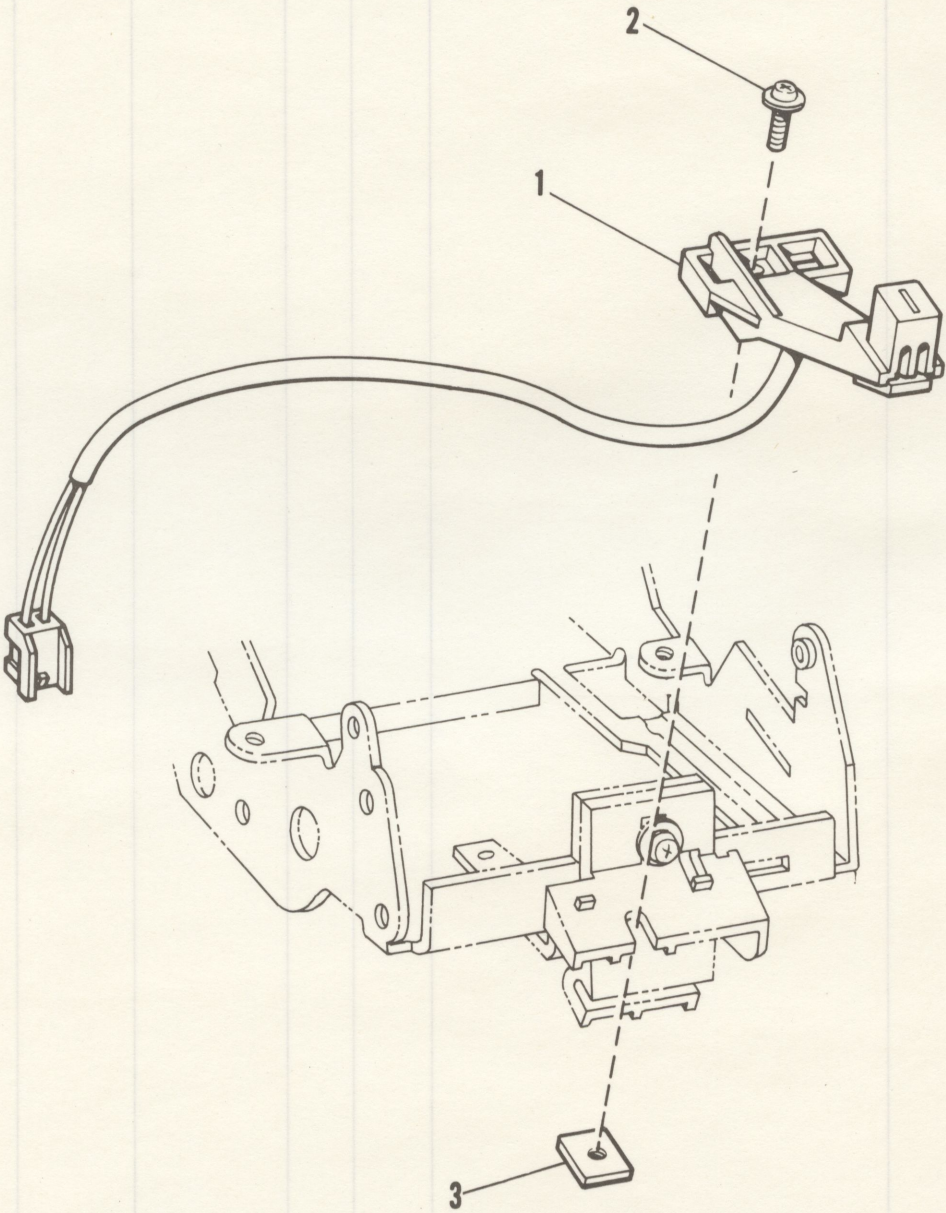
Model: EM-80

MAIN-REF. NO.	TC-043	Functional group name	CARRIAGE HEAD MECHANISM						
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK	
						FROM	UP TO		
48	576787001	Head Guide	1						
49	533527001	Screw for Head Guide	1						
50	U05743001	Flat Cable Holder	1						
51	U05923001	Shoulder Screw for Flat Cable Holder	1						
52	U00505001	Binder	4						
									

CARRIAGE HEAD ATTACHMENT

Model: EM-80

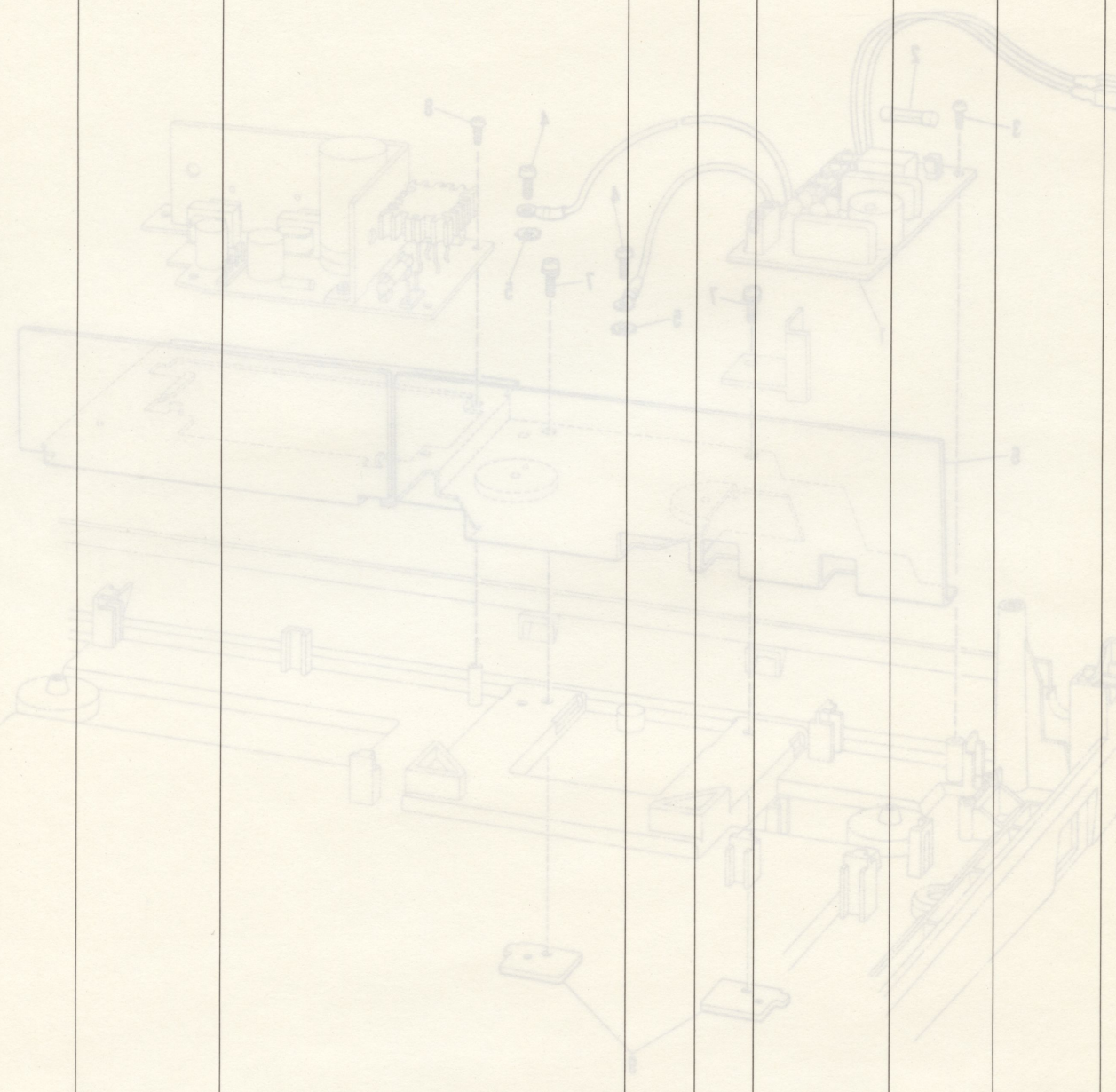
MAIN-REF. NO.	TC-044
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PARTS CODE & PARTS NAME

Model: EM-80

Model EM-80

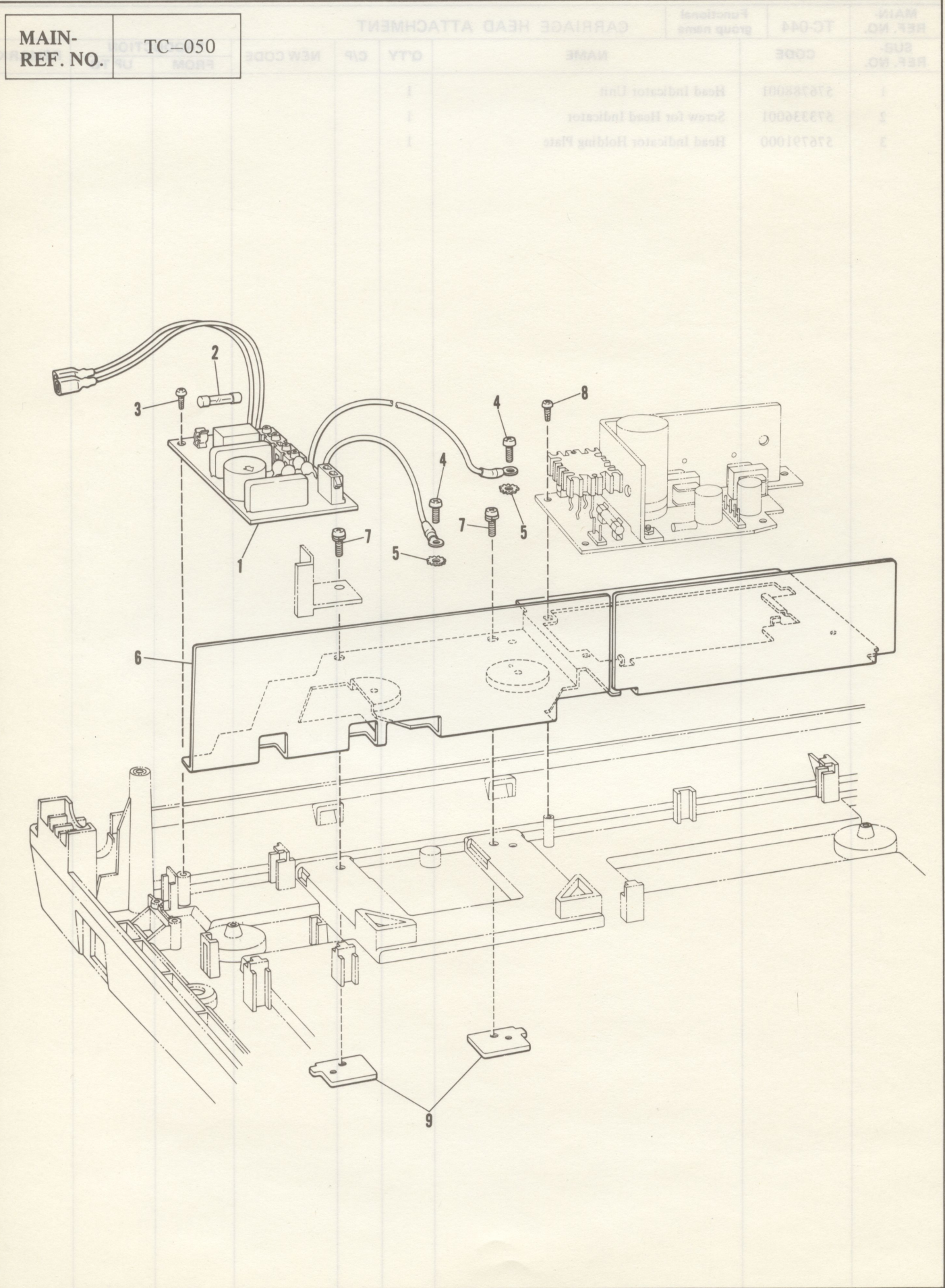
MAIN-REF. NO.	TC-044	Functional group name	CARRIAGE HEAD ATTACHMENT				PRODUCTION		REMARK
							FROM	UP TO	
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE				
1	576788001	Head Indicator Unit	1						
2	573336001	Screw for Head Indicator	1						
3	576791000	Head Indicator Holding Plate	1						
									

000-114-000

TILTER CIRCUIT BOARD

Model: EM-80

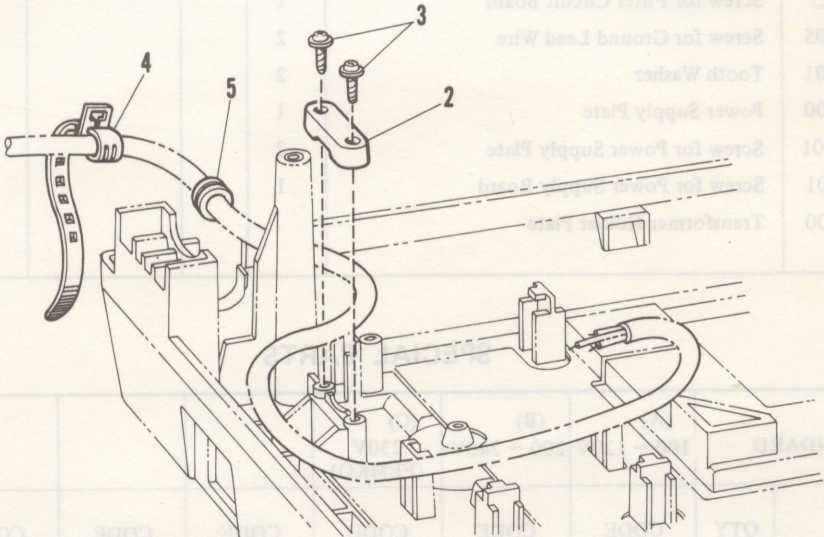
MAIN- REF. NO.	TC-050
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POWER SUPPLY CORD

Model: EM-80

MAIN- REF. NO.	TC-051
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1A		1J	
1B		1K	
1C		1L	
1D		1M	
1E		1N	
1F			
1G			

PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-051	Functional group name	POWER SUPPLY CORD					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Power Supply Cord (with 4, 5)	1					
2	571969000	Cord Holder	1					
3	575363001	Screw for Cord Holder	2					
4	516646000	Cord Binder	1					
5	571853001	Cord Bush	1					
6	214953000	Label for BS Cord	1					
7	062350605	Screw (C.S.A. only)						
8	502673001	Tooth Washer (C.S.A. only)						

SPECIAL PARTS

NAME CODE COLOR & DESCRIPTION	Power Supply Cord							
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	
UL/Others	1A	575169001						
VDE (GERMANY)	1B	575171001						
BS (ENGLAND)	1C	575313001						
SEV (SWISS)	1D	575332001						
USE (FRANCE)	1E	575315001						
(EUROPE-B)	1F	575317001						
(EUROPE-C)	1G	575334001						
AUSTRALIA	1J	575320001						
DEMKO (DENMARK)	1L	575336001						
ARGENTINE/Others	1M	575338001						
CSA (CANADA)	1N	576621001						

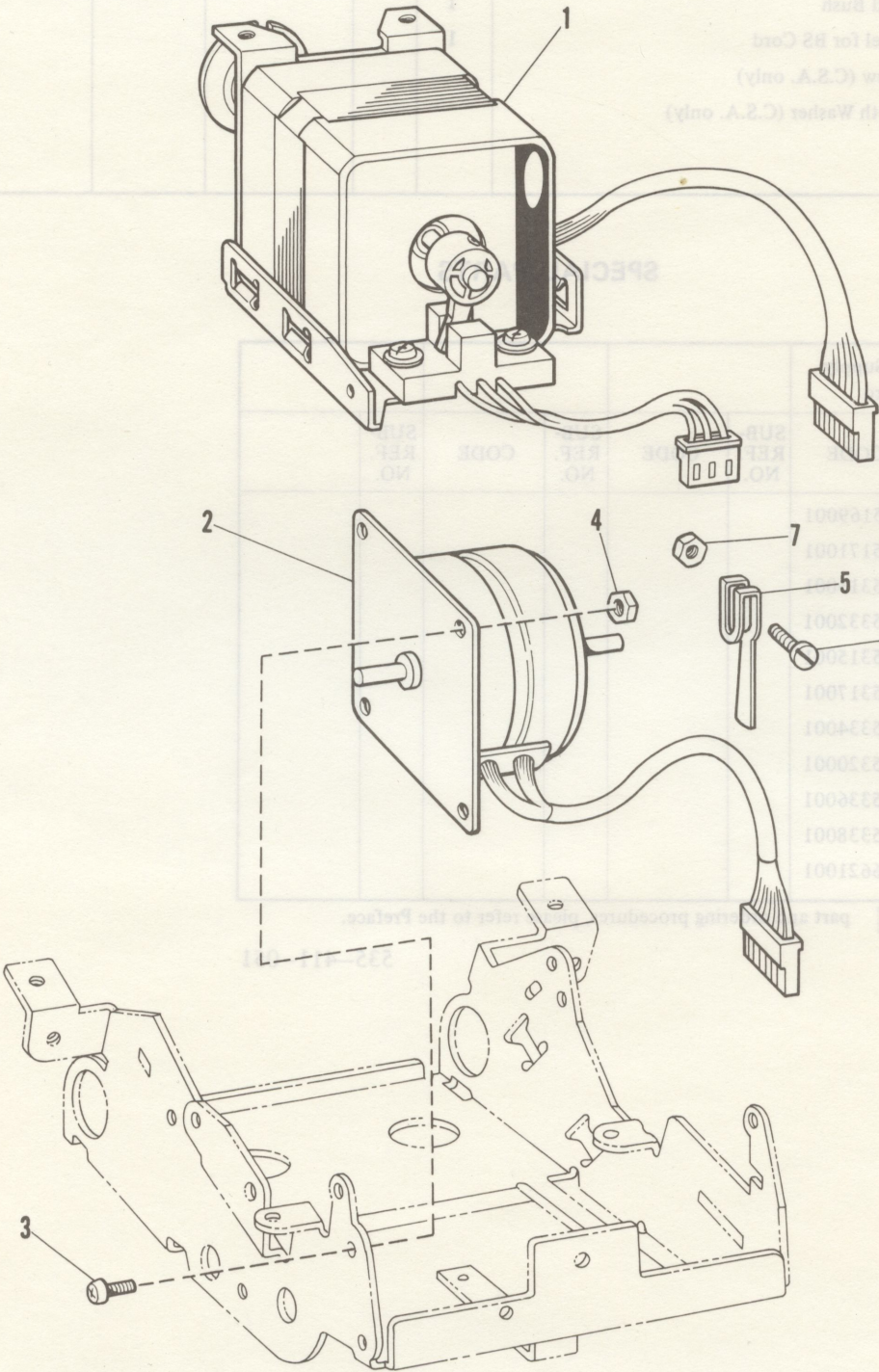
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-051

MOTOR

Model: EM-80

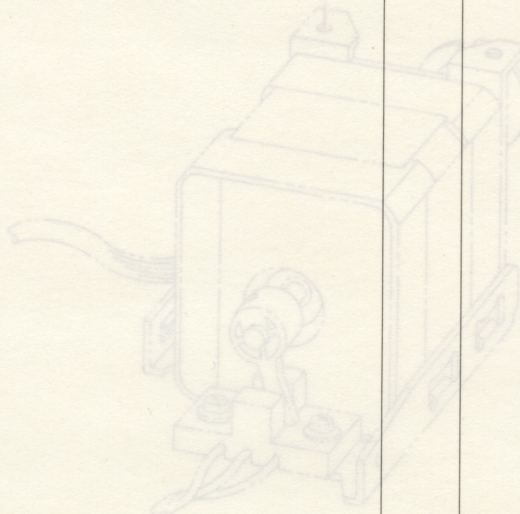
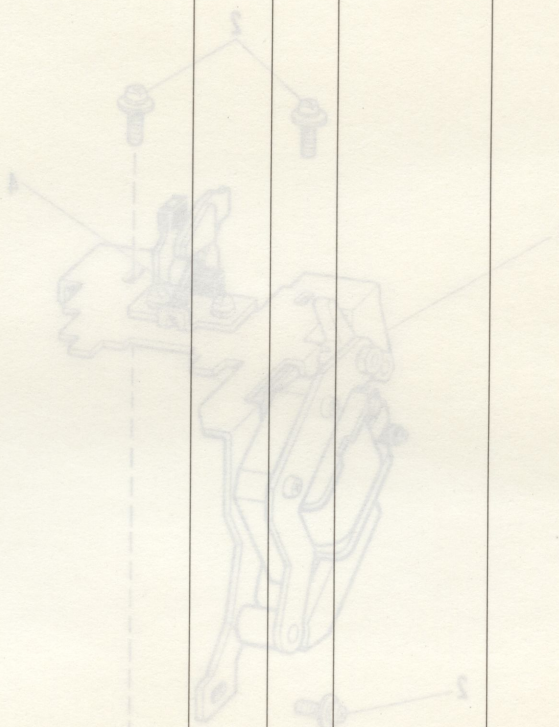
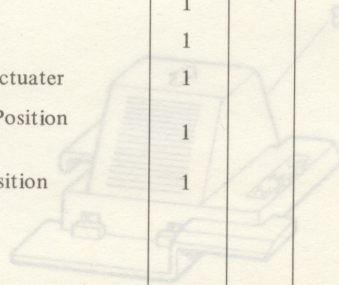
MAIN- REF. NO.	TC-054
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN- REF. NO.	TC-054	Functional group name	MOTOR					
SUB- REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	576984001	Wheel Motor Unit	1					
2	U05701001	Ribbon Motor	1					
3	002300615	Screw for Ribbon Motor	1					
4	021300106	Nut for Ribbon Motor	1					
5	U05703000	Ribbon Lift Home Position Actuator	1					
6	007260813	Screw for Ribbon Lift Home Position Actuator	1					
7	021260106	Nut for Ribbon Lift Home Position Actuator	1					



HAMMER SOLENOID

Model: EM-80

MAIN-REF. NO.

TC-055

REF. NO.	SUB-REF. NO.	CODE	NAME	QTY	CP	NEW CODE	FUNCTIONAL GROUP NAME	MOTOR
1		276981001	Wheel Motor Unit	1				
2		U03701001	Ribbon Motor	1				
3		002300613	Screw for Ribbon Motor	1				
4		021300106	Nut for Ribbon Motor	1				
5		U03703000	Ribbon Lift Home Position Actuator	1				
6		002300813	Screw for Ribbon Lift Home Position Actuator	1				
7		021300106	Nut for Ribbon Lift Home Position Actuator	1				

PARTS CODE & PARTS NAME

Model: EM-80

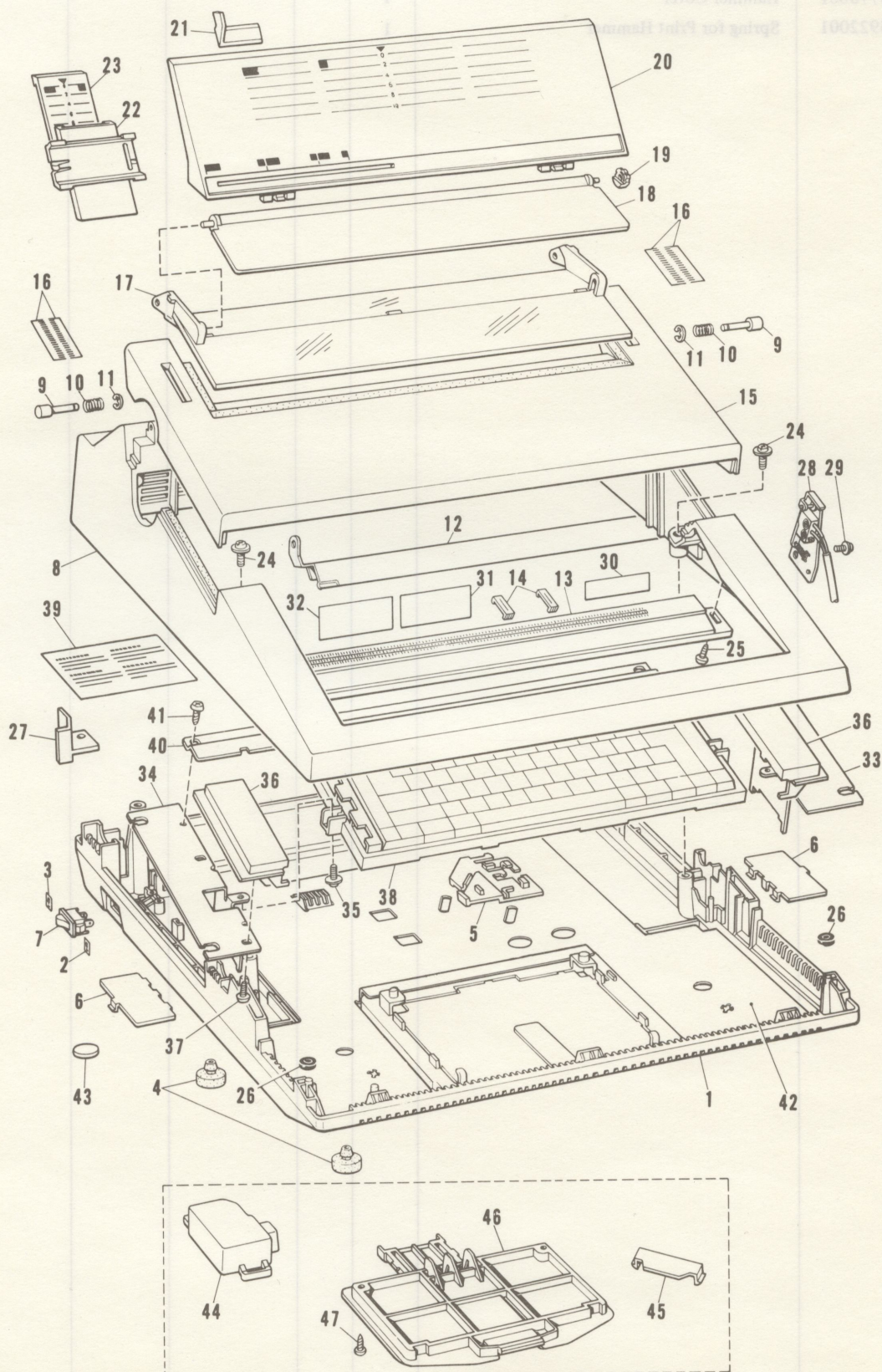
MAIN-REF. NO.	TC-055	Functional group name	HAMMER SOLENOID					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	U05751001	Hammer Holder Unit (With 4)	1					
2	571823001	Screw for Hammer Holder	3					
3	U05776001	Hammer Cover	1					
4	U05922001	Spring for Print Hammer	1					

COVER

Model: EM-80

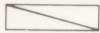
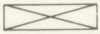
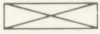
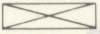
MAIN-
REF. NO.

TC-061



PARTS CODE & PARTS NAME

Model: EM-80

MAIN- REF. NO.	TC-061	Functional group name	COVER					
SUB- REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Lower Cover Unit (with 2-4, 42)	1					
2		Switch Indicator ON	1					
3		Switch Indicator OFF	1					
4	575201001	Rubber Foot	4					
5	576793001	Cable Holder	1					
6	575200001	Wire Harness Holder	2					
7	575198001	ON/OFF Switch	1					
8	576823001	Upper Cover Unit (with 9-11)	1					
9	575208001	Top Cover Shaft	2					
10	575249001	Spring for Top Cover Shaft	2					
11	048020346	E-Ring for Top Cover Shaft	2					
12	575209001	Paper Rest	1					
13	576555001	Margin Scale Base Unit (with 14)	1					
14	575215001	Margin Scale Cursor	2					
15	576810002	Top Cover Unit	1					
16	571875001	Cover Blind PR	4					
17-19	575220001	Acoustic Cover Unit	1					
17	575221001	Acoustic Cover	1					
18	575222001	Blinder	1					
19	576722001	Collar	1					
20-23	575223001	Paper Supporter Unit	1					
20	575224001	Paper Supporter	1					
21	575225001	Paper Guide	1					
22	573114001	PE Indicator Holder	1					
23	575226001	PE Indicator	1					
24	519483001	Screw for Upper Cover	4					
25	575362001	Screw for Margin Scale Base	2					
26	575230001	Rubber	4					
27	576824001	Cord Plate	4					
28	576551001	Cover Switch Unit	1					
29	571672001	Screw for Cover Switch Holder	1					
30	572037001	Lable for UL Fuse (U.S.A. only)	1					
31	U01810001	Lable for F.C.C. (U.S.A. only)	1					
32		Rating Plate	1					
33	576795000	Keyboard Holder R	1					
34	576796000	Keyboard Holder L	1					
35	524921001	Screw for KB Panel	2					
36	576797001	Keyboard Cover	2					
37	220814001	Screw for Keyboard Cover	4					
38	576825001	Keyboard Panel 80	1					

Caution: To visualize the

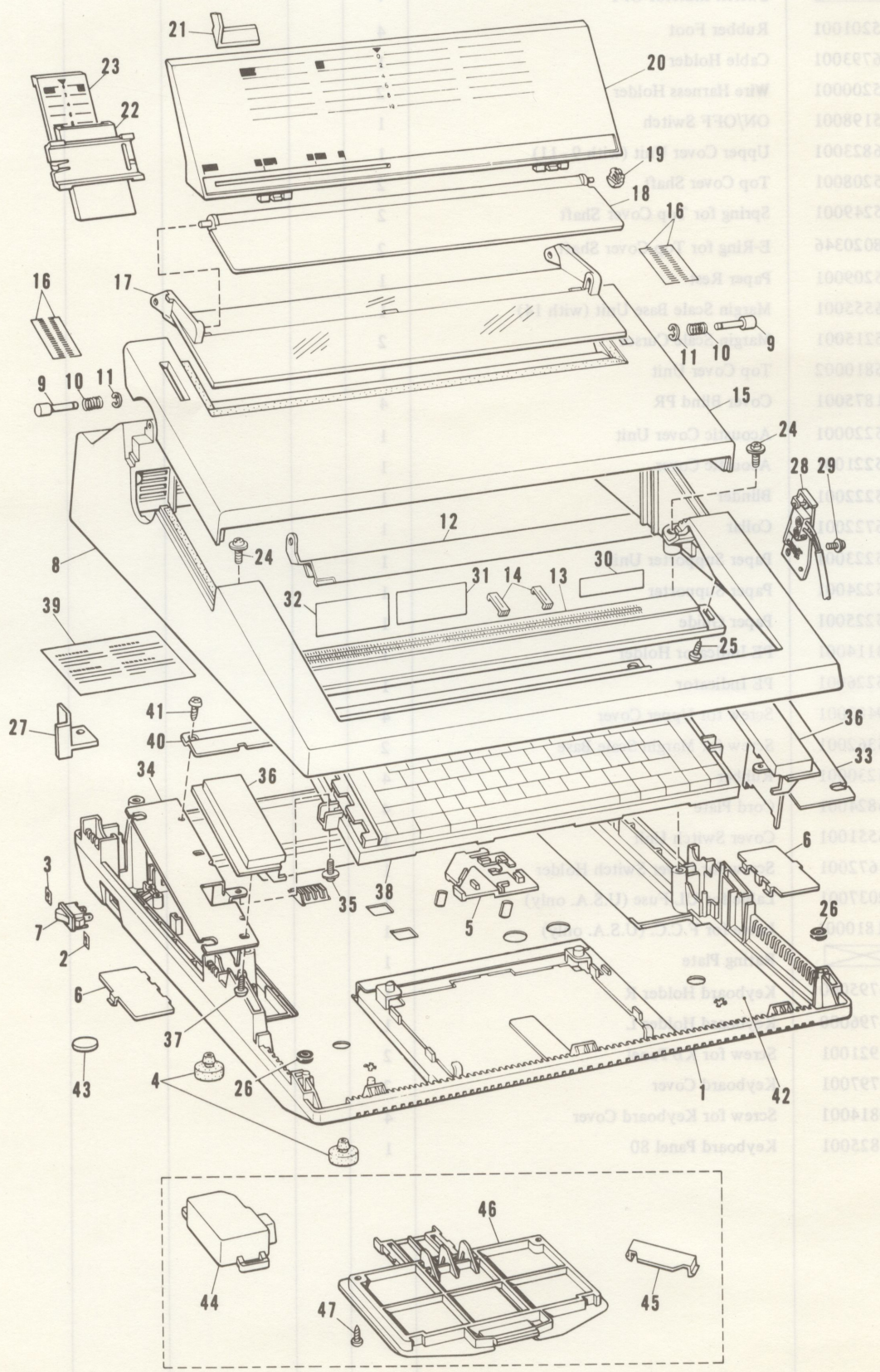


part and ordering procedures, please refer to the Preface.

COVER

Model: EM-80

MAIN-REF. NO.	TC-061
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-061	Functional group name	COVER					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
39	575329001	Label for CAUTION	1					
40	576833001	Margin Scale Base Holder	1					
41	571672001	Screw for Margin Scale Base Holder	2					
42		Lower Cover Plate	1					
43	576629000	Fuse Holder Cover (FEMKO only)	1					
44	576632001	Filter Circuit Board Cover (C.S.A. only)	1					
45	575199001	Flat Cable Holder (C.S.A. only)	1					
46	576061002	Keyboard Lower Cover (C.S.A. only)	1					
47	576161001	Screw for K.B. Lower Cover (C.S.A. only)	2					

SPECIAL PARTS

NAME COLOR & DESCRIPTION	Lower Cover Unit		Switch Indicator ON		Switch Indicator OFF		Rating Plate		Lower Cover Plate		
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	
Black-101 (Others)	1A	575195002									
Black-101 (B.S. only)	1B	576990002									
Black-101 (C.S.A. only)	1C	576820002									
B.S. only			2A	576304001	3A	576305001					
Others			2B	576325001	3B	576326001					
C.S.A. only									42A	576623001	
Others									42B	575202001	
B EM-80 115V 50/60Hz							32A	576813001			
B EM-80 UL							32B	576976001			
B EM-80 CSA							32C	576977001			
B EM-80 (FRENCH)							32D	U70207001			
B EM-80 220V 50/60Hz							32E	U70208001			
B EM-80 (f)							32F	U70206001			
B EM-80 TUV							32G	576982001			
B EM-80 SEV							32H	576978001			
B EM-80 NEMKO							32I	576979001			
B EM-80 240V 50Hz							32J	U70210001			
B EM-80 BS							32K	576980001			
B EM-80 230V 50/60Hz							32L	U70209001			
B EM-80 FEMKO							32M	576981001			
B EM-80 115V 60Hz							32N	U70203001			
B EM-80 120V 60Hz							32P	U70204001			
B EM-80 110V 60Hz							32Q	U70202001			
B EM-80 200V 50Hz							32R	U70205001			

Caution: To visualize the



part and ordering procedures, please refer to the Preface.

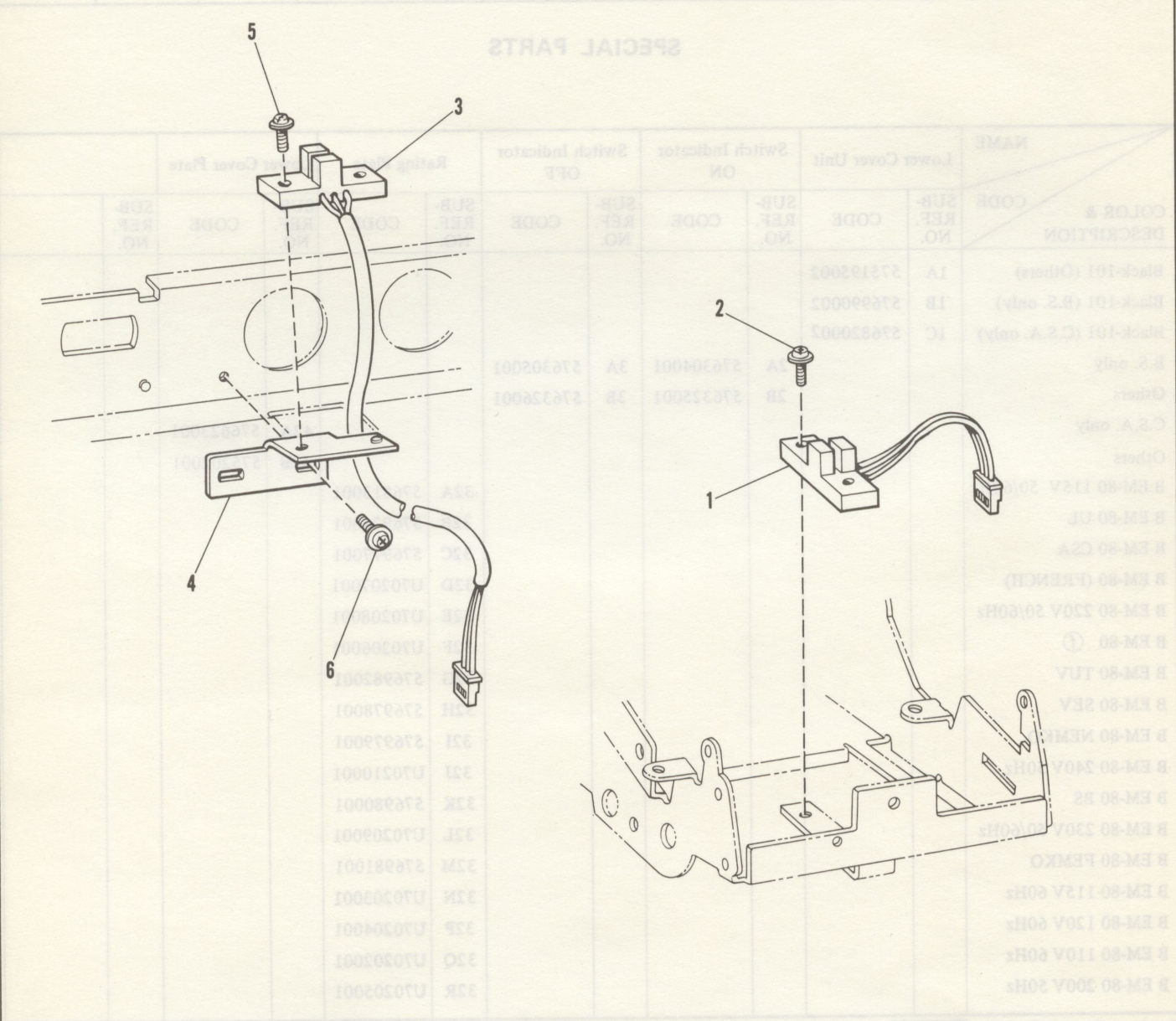
535-411-061

DETECTOR

Model: EM-80

MAIN-REF. NO.	TC-100
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MAIN-REF. NO.	SUB-REF. NO.	CODE	NAME	QTY	NEW CODE
43		376161001	Screw for K.B. Lower Cover (C.S.A. only)	2	
46		376081002	Keyboard Lower Cover (C.S.A. only)	1	
42		372199001	Flat Cable Holder (C.S.A. only)	1	
44		376632001	Filter Circuit Board Cover (C.S.A. only)	1	
43		376629000	Fuse Holder Cover (FEMKO only)	1	
43			Lower Cover Plate	1	
41		371612001	Screw for Margin Scale Base Holder	2	
40		376813001	Margin Scale Base Holder	1	
39		375329001	Label for CAUTION	1	



Caution: To visualize the part and ordering procedure, please refer to the Preface.

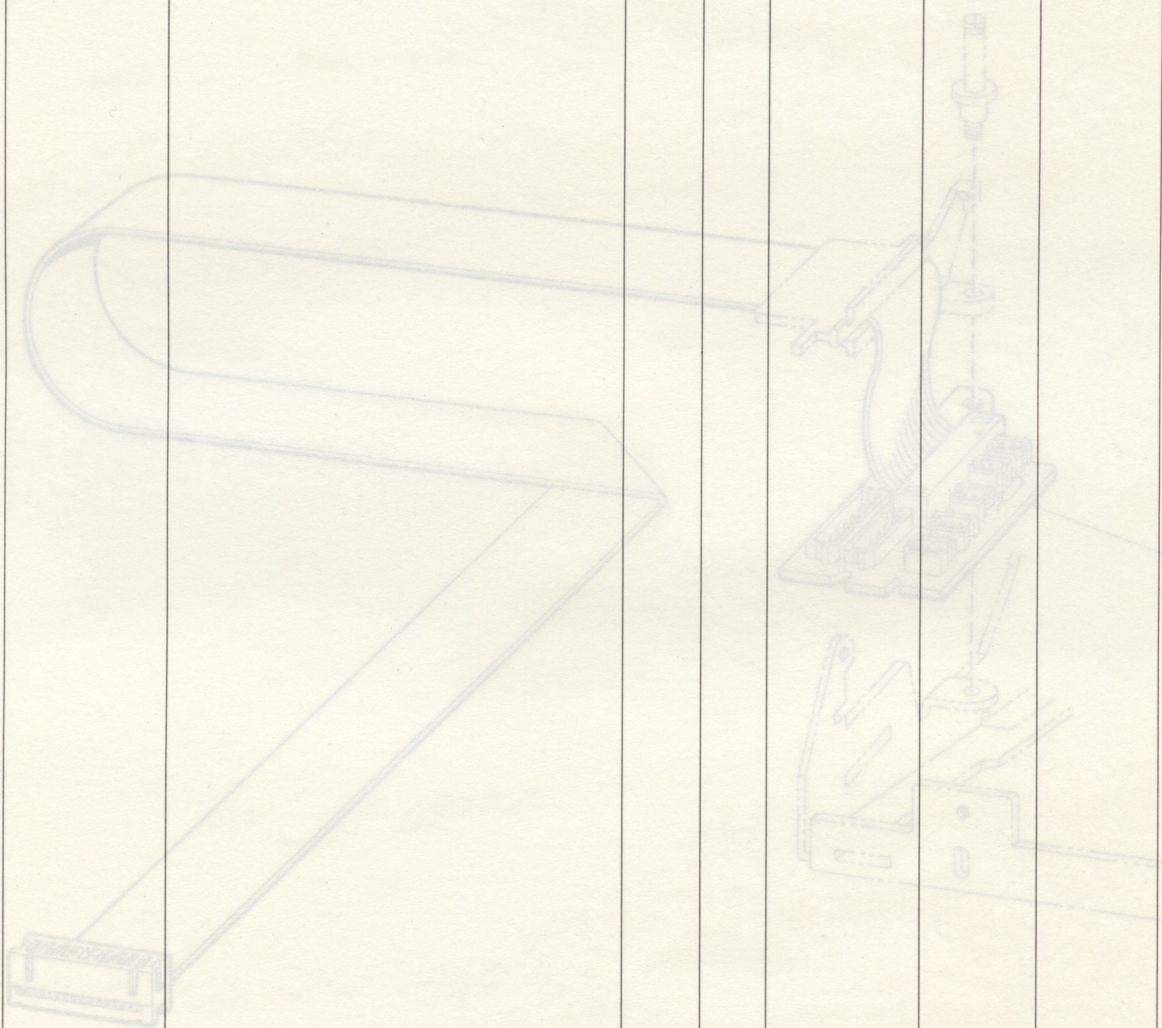
332-411-081

PARTS CODE & PARTS NAME

Model: EM-80

08-M3 label

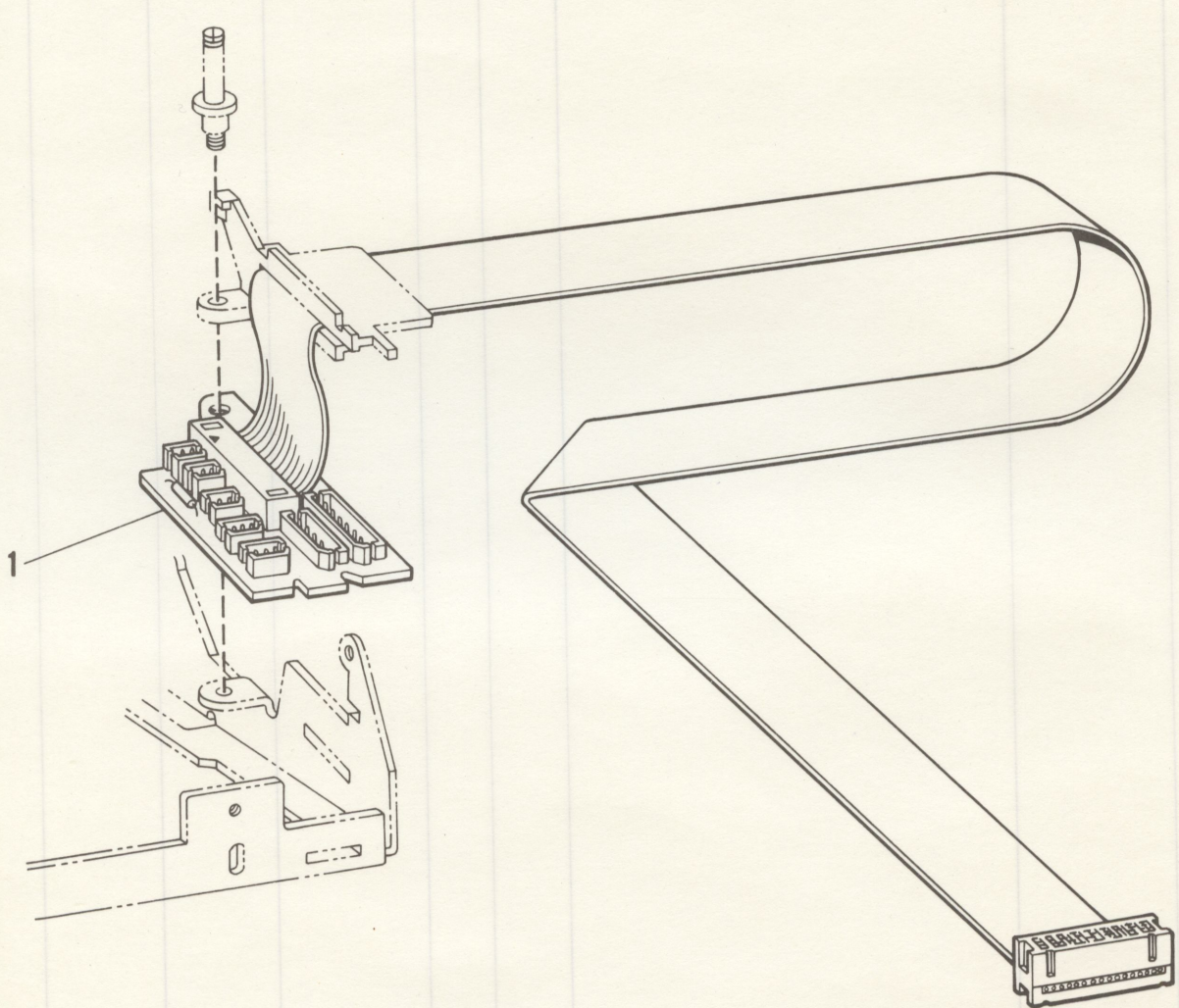
MAIN-REF. NO.	TC-100	Functional group name	DETECTOR					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	U05382001	Ribbon Detector	1					
2	573336001	Screw for Ribbon Detector	2					
3	576822001	Carriage Detector	1					
4	576798000	Carriage Detector Holder	1					
5	573336001	Screw for Carriage Detector	1					
6	533658001	Screw for Carriage Detector Holder	1					



RELAY CIRCUIT BOARD

Model: EM-80

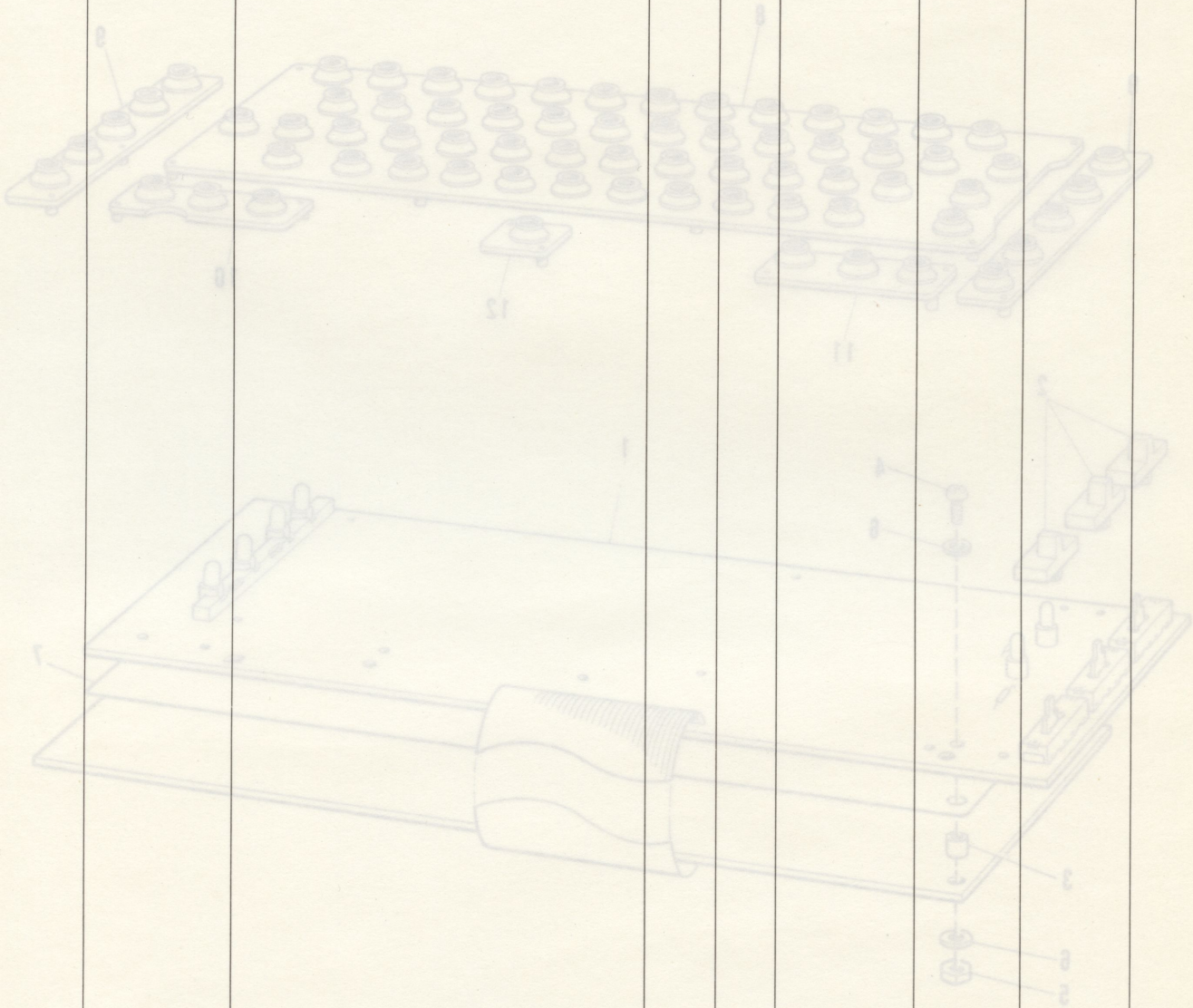
MAIN- REF. NO.	TC-101
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PARTS CODE & PARTS NAME

Model: EM-80

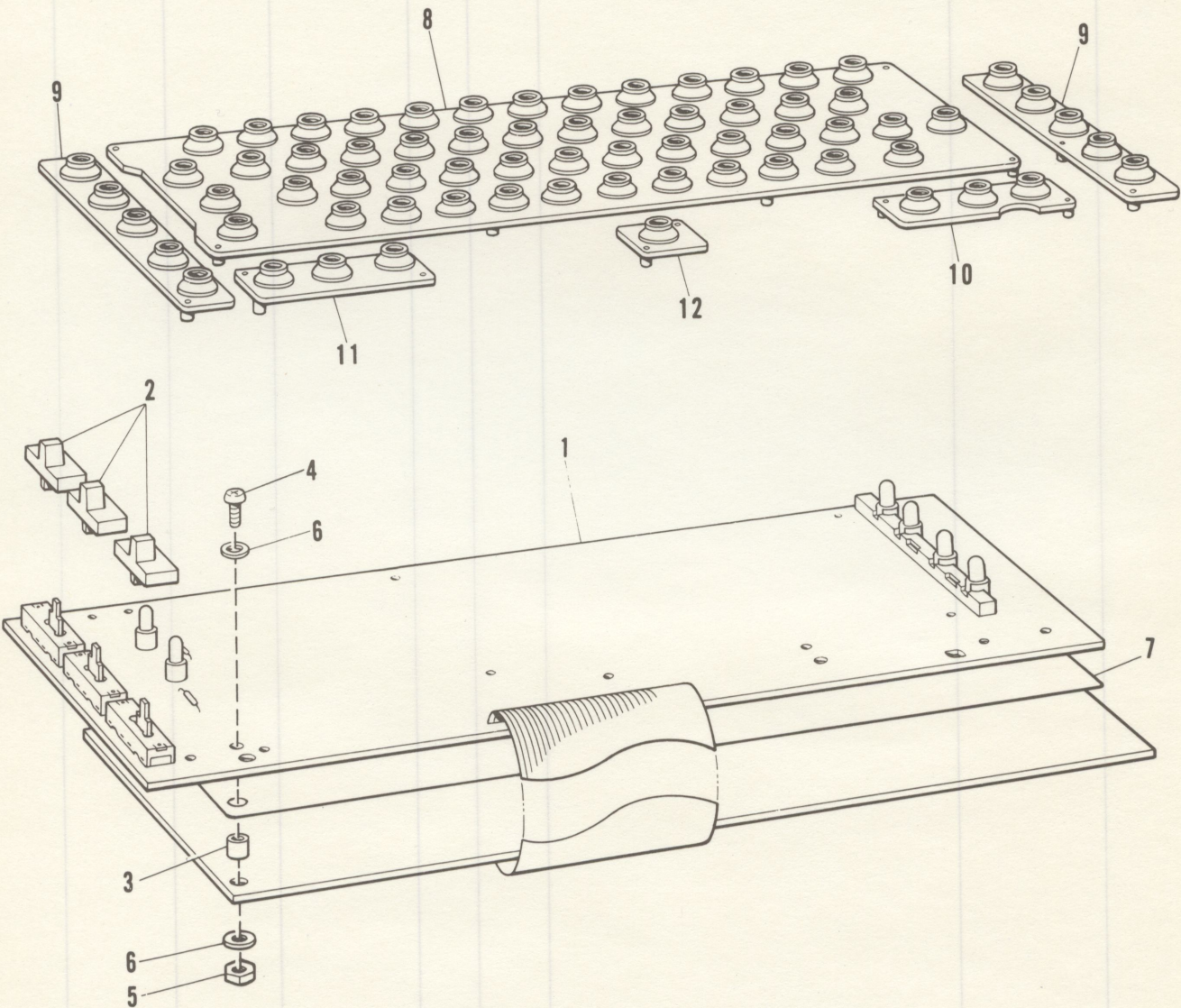
MAIN-REF. NO.	TC-101	Functional group name	RELAY CIRCUIT BOARD	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
							FROM	UP TO	
1	576821001	Relay Circuit Board Assembly		1					



LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD

Model: EM-80

MAIN- REF. NO.	TC-102
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-102	Functional group name	LOGIC CONTROL WITH KEYBOARD CIRCUIT BOARD					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Logic Control with Keyboard Circuit Board Assembly (with 2~12)	1					
2	U05797001	Tip for Slide Switch	3					
3	U05798000	Circuit Board Spacer	2					
4	002301205	Screw for Spacer	2					
5	021300106	Nut for Screw	2					
6	025030133	Washer for Screw	2					
7	575865001	Insulator	1					
8	U05794000	Contact Plate 46K	1					
9	U05796000	Contact Plate 5K	2					
10	U05795000	Contact Plate 3K (Right)	1					
11	U05903000	Contact Plate 3K (Left)	1					
12	U00867000	Contact Plate 1K	1					

NAME COLOR & DESCRIPTION	CODE	Logic Control with Keyboard Circuit Board Assembly (with 2 ~ 12)					
		SUB-REF. NO.	CODE				
American English	1A	576849000					
German	1B	576849004					
King's English	1C	576849003					
French	1D	576849012					
Dutch	1E	576849013					
Swiss (German French)	1F	576849016					
Bilingual	1G	576849002					
Spanish (South America Central America)	1H	576849008					
Norwegian	1I	576849010					
Spanish for Spain	1J	576849014					
Italian	1K	576849005					
Danish	1L	576849011					
South Africa	1M	576849015					
Swedish	1N	576849018					
Finnish	1P	576849019					
Portuguese	1Q	576849020					
Latin & Greek	1R	576849022					
Chili	1S	576849009					
Turkish	1T	576849025					

Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-102

PARTS CODE & PARTS NAME

Model: EM-80

Model: EM-80

MAIN-REF. NO.	TC-104	Functional group name	POWER SUPPLY CIRCUIT BOARD				PRODUCTION		REMARK
							FROM	UP TO	
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE				
1	576850001	Power Supply Circuit Board Assembly (with 5 ~ 6)	1						
2	571672001	Screw for P.S. Circuit Board Assembly	1						
3	502673001	Washer for Ground Wire	1						
4	002350606	Screw for Ground Wire	1						
5	U15325000	Glass Fuse 5A	1						
6	U15324000	Glass Fuse 2.5A	1						
7	U70212001	Power Supply Harness Unit	1						

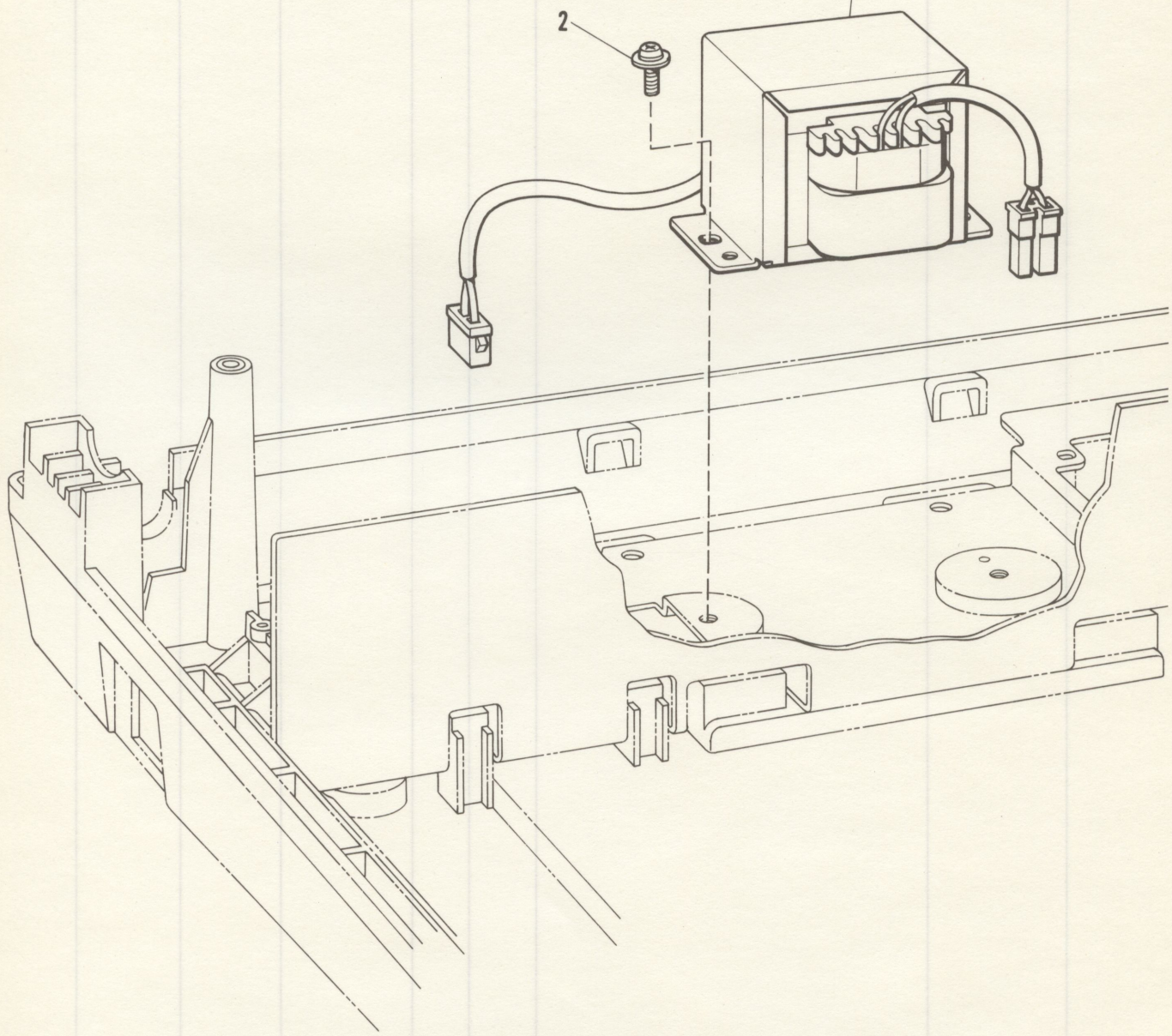
201-411-252

POWER SUPPLY TRANSFORMER

Model: EM-80

MAIN- REF. NO.	TC-105
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MAIN- REF. NO.	SUB- REF. NO.	CODE	NAME	QTY	CP	NEW CODE
1	1	27820001	Power Supply Circuit Board Assembly	1		
			(with 2 - 0)			
2	2	27162001	Screw for P.S. Circuit Board Assembly	1		
3	3	30262001	Washer for Ground Wire	1		
4	4	00232000	Screw for Ground Wire	1		
5	5	U1322000	Class Tube 2A	1		
6	6	U1324000	Class Tube 2.5A	1		
7	7	U70212001	Power Supply Harness Unit	1		



PARTS CODE & PARTS NAME

Model:

MAIN-REF. NO.	TC-105	Functional group name	POWER SUPPLY TRANSFORMER					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Power Supply Transformer	1					
2	533777001	Screw for P.S. Transformer	2					

SPECIAL PARTS

NAME COLOR & DESCRIPTION	Power Supply Transformer											
	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.
100V		1A	576800001									
115V		1B	576802001									
220V		1C	576805001									
240V		1D	576807001									
200V		1E	576804001									
110V		1F	576801001									

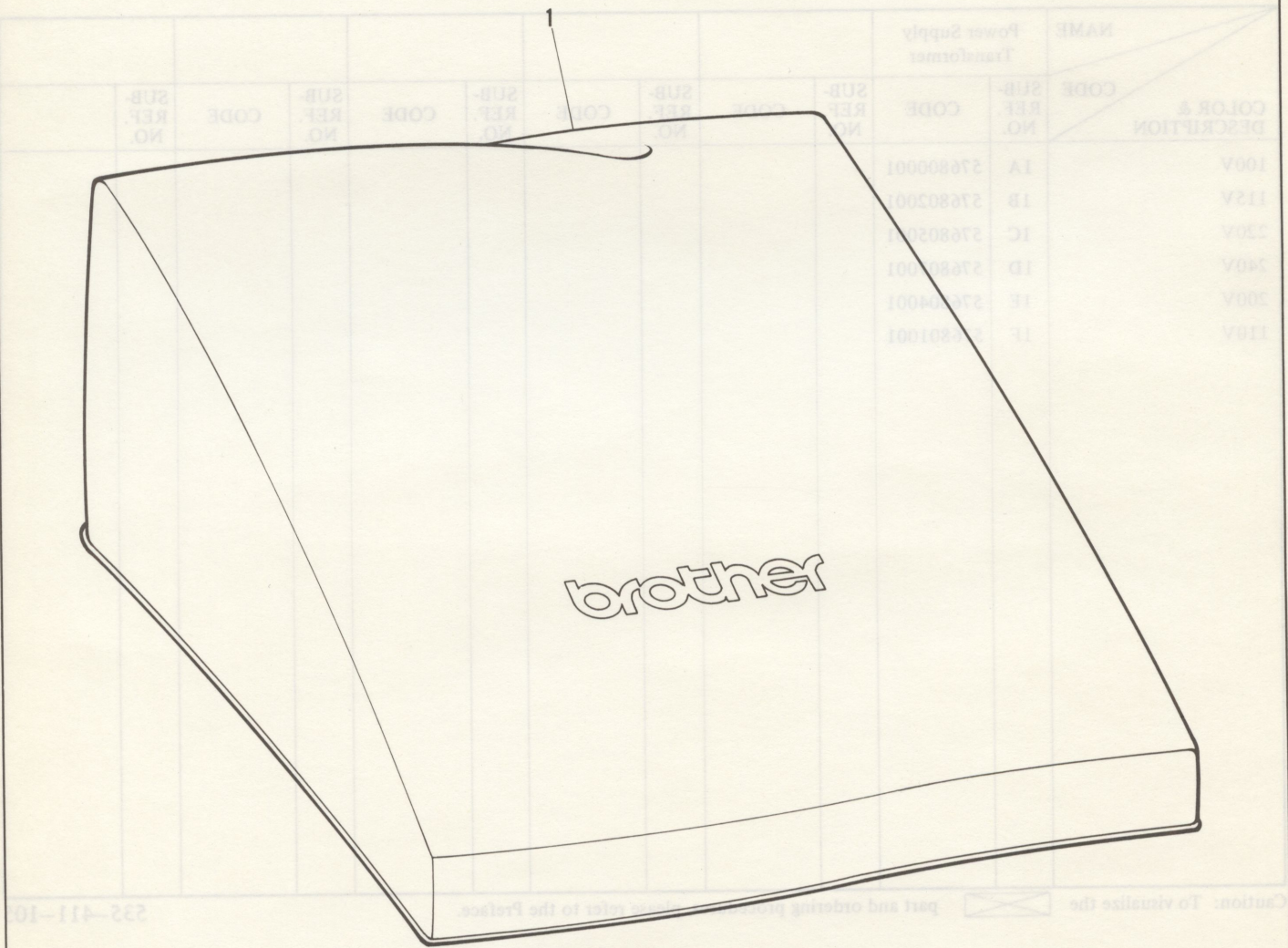
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-105

PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-910
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-910	Functional group name	ACCESSORY					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1	575358001	Dust Cover	1					

Model: EM-80

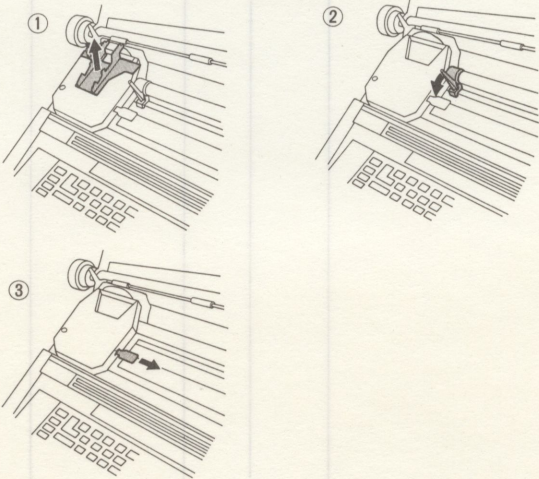
Model: EM-80

MAIN-REF. NO.	TC-920
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1.



2.



PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-920	Functional group name	PRINTED MATTER						
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK	
						FROM	UP TO		
1		Instruction Book	1						
2		Unpacking Instruction Sheet	1						

SPECIAL PARTS

NAME COLOR & DESCRIPTION	Instruction Book		Unpacking Instruction Sheet							
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE
ENGLISH (U.S.A. & CANADA only)	1A	593541011								
GERMANY	1B	593541012								
ENGLISH (others)	1C	593541013								
FRENCH	1D	593541014								
DUTCH	1E	593541015								
NORWEGIAN	1F	593541016								
SPANISH	1G	593541017								
FINNISH	1H	593541018								
ITALIAN	1I	593541019								
SWEDISH	1J	593541020								
DANISH	1K	593541021								
			2A	593541080						

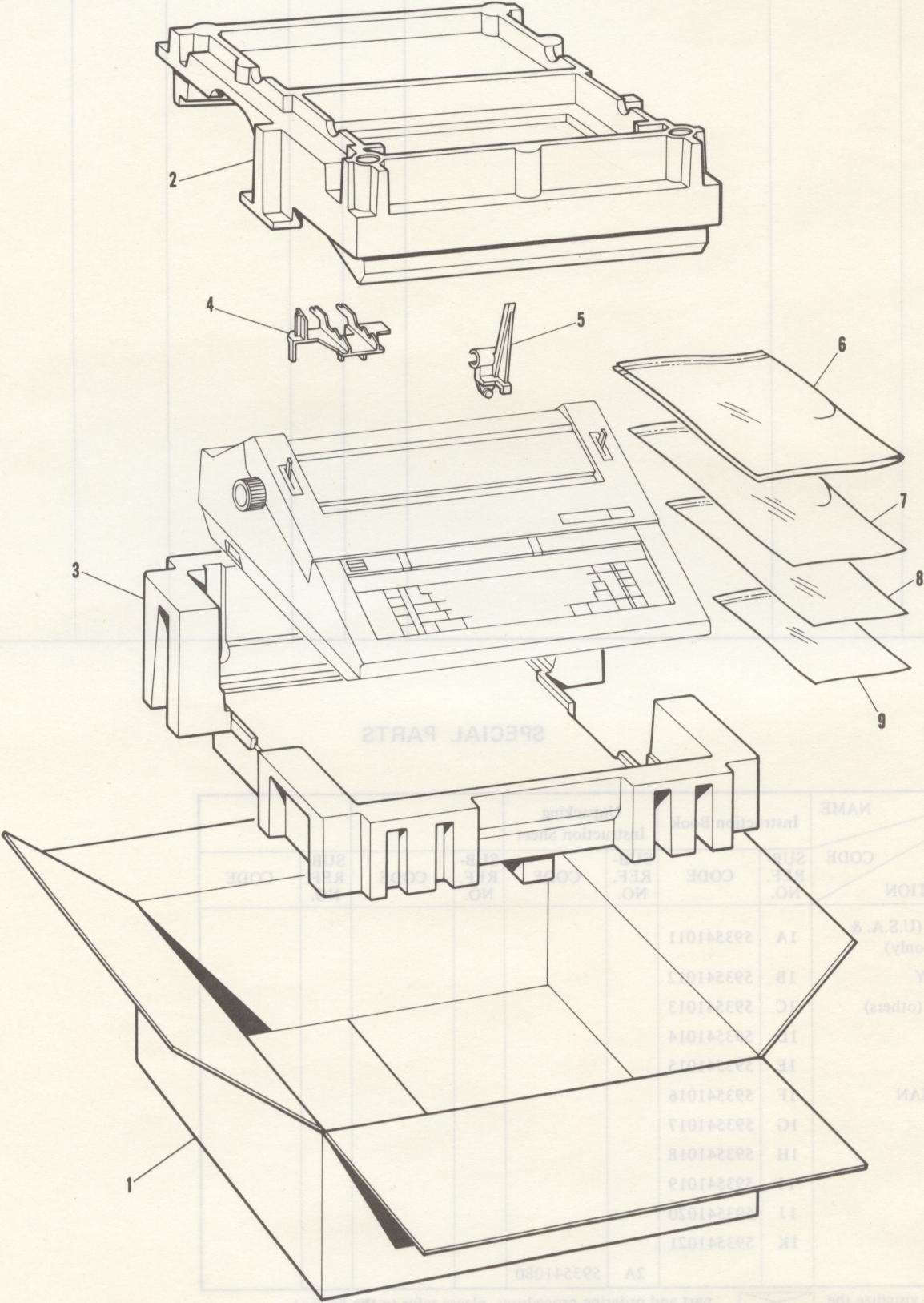
Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-920

PACKING MATERIAL

Model: EM-80

MAIN-REF. NO.	TC-930
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PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.	TC-930	Functional group name	PACKING MATERIAL					
SUB-REF. NO.	CODE	NAME	Q'TY	C/P	NEW CODE	PRODUCTION		REMARK
						FROM	UP TO	
1		Carton						
(2 - 3)	562361001	Styrofoam for Body Unit	1					
2	562312001	Styrofoam for Upper Cover	1					
3	562360001	Styrofoam for Lower Cover	1					
4	562813001	Carriage Pad	1					
5	562812001	Carriage Stopper	1					
6		Plastic Bag for Body	1					
7		Plastic Bag for Acoustic Cover	1					
8		Plastic Bag for Paper Supporter	1					
9	560464000	Plastic Bag for Instruction Book	1					

SPECIAL PARTS

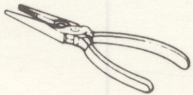
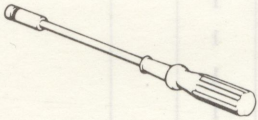
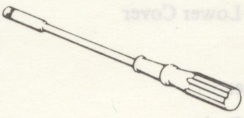
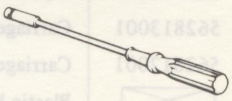
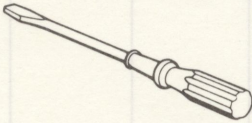
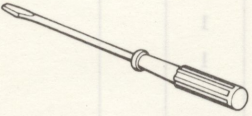
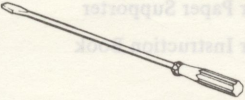
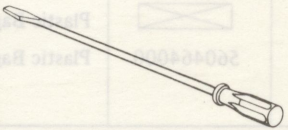
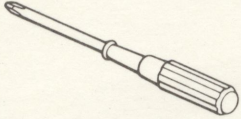
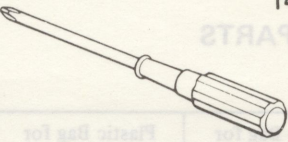
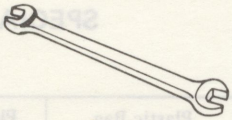
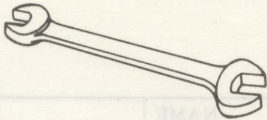
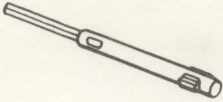
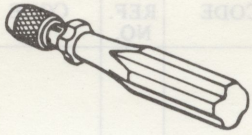
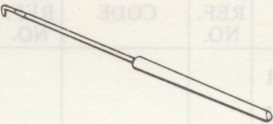
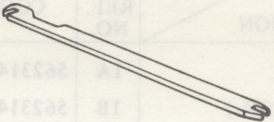
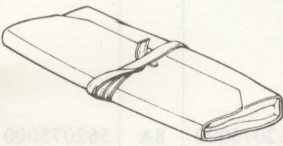
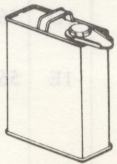
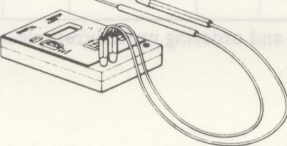
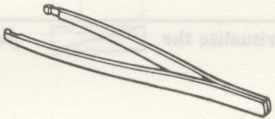
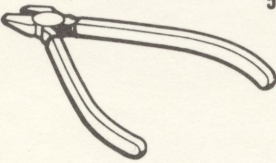
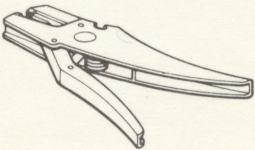
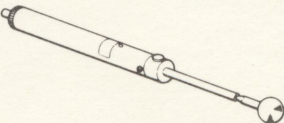
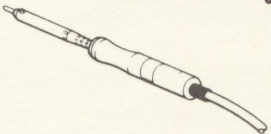
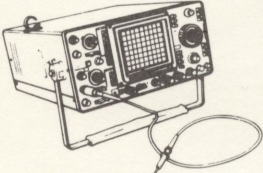
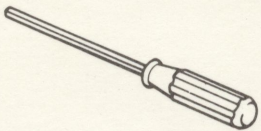
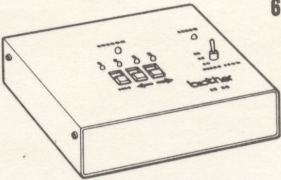
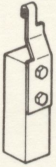
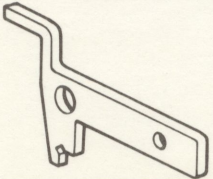
NAME COLOR & DESTINATION	Carton		Plastic Bag for Body		Plastic Bag for Acoustic Cover		Plastic Bag for Paper Supporter	
	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE	SUB-REF. NO.	CODE
Non Brand	1A	562314021						
Brother (U.S.A.)	1B	562314022						
Brother (CANADA)	1C	562314041						
Brother (Europe) (Others)	1D	562314054						
Brother (FRENCH)	1E	562314055						
Others			6A	561752000	7A	562075000	8A	562075000
ENGLAND only			6B	561785000	7B	562077000	8B	562077000

Caution: To visualize the  part and ordering procedures, please refer to the Preface.

535-411-930

ADJUSTING TOOL KIT

Model: EM-80

MAIN- REF. NO.	ZX-15X						
	1		4		5		6
	9		10		11		12
	13		14		18		19-1
	26		27		29		30
	31		32		39-A -D		42-B
	43-A -D		44		46		47
	51		52		53		58
	59		64		67		80
	81						

PARTS CODE & PARTS NAME

Model: EM-80

MAIN-REF. NO.		ZX-15	Functional group name	ADJUSTING TOOL KIT					
LEVEL		SUB. REF. NO.		EM-80					
II & III	IV								
☐	☐	1	Plier (150 m/m)	☐					
☐	☐	4	Box Driver (5.5 m/m)	☐					
☐	☐	5	Box Driver (6.0 m/m)	☐					
☐	☐	6	Box Driver (7.0 m/m)	☐					
☐	☐	9	Driver (75 m/m)	☐					
☐	☐	10	Driver (70 m/m)	☐					
☐	☐	11	Driver (4.7 x 200 m/m)	☐					
☐	☐	12	Driver (6.2 x 200 m/m)	☐					
☐	☐	13	Plus Driver (NO-1)	☐					
☐	☐	14	Plus Driver (NO-2)	☐					
☐	☐	18	Spanner (5.5 x 7 m/m)	☐					
☐	☐	19-1	Spanner (8.0 x 10 m/m)	☐					
☐	☐	26	Hexagonal Wrench (2.0 m/m)	☐					
☐	☐	27	Grip for Hexagonal Wrench	☐					
☐	☐	29	Hook for Spring	☐					
☐	☐	30	Rod Guide Tool	☐					
☐	☐	31	Pincette (150 m/m)	☐					
☐	☐	32	Tool Carrying Bag	☐					
☐	☐	39-A	Wire Gauge (1.0 x 100 m/m)	☐					
☐	☐	39-D	Wire Gauge (0.5 x 100 m/m)	☐					
☐	☐	42-B	Lubricating Oil (uniway Oil #68)	☐					
☐	☐	43-A	Lubricating Grease (Epinoc Grease #1)	☐					
☐	☐	43-D	Lubricating Grease (Silicon Grease KS64F)	☐					
☐	☐	44	Oiler	☐					
	☐	46	Tester (MD-200C)	☐					
☐	☐	47	Connector & Knob Removing Tool	☐					
	☐	49	Key Unit	☐					
	☐	50	Conducting Sponge (Per 100 pcs.)	☐					
	☐	51	Nipper (No. 55S)	☐					
	☐	52	Stripper	☐					
	☐	53	Solder Sucker (DS-110)	☐					
	☐ *	58	Soldering Tool	☐					
	☐ *	59	Syncroscope	☐					
☐	☐	64	Hexagonal Wrench (2.0 x 50 m/m)	☐					
☐	☐	67	Checker (CH-60)	☐					
☐	☐	80	Drive Wire Tension Adjustment Scale (EM-80)	☐					
☐	☐	81	Carriage Guide Shaft Adjusting Gauge (EM-80)	☐					

Caution: Tool with (LEVEL IV *) mark should be supplied locally in each country because of the difference of electrical specifications.

SERVICE MANUAL

SERVICE MANUAL

MODEL : EM-80

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Chapter 1 GENERAL DESCRIPTION

Composition

The Electronic Typewriter EM-80 mainly consists of the following five sections:

1. Carriage head unit

The carriage head unit itself has print mechanism, ribbon feed mechanism, ribbon lift mechanisms and correction mechanism.

Wheel drive motor, hammer solenoid, ribbon drive motor and correction solenoid are installed on the head holder.

2. Chassis and platen unit

Carriage drive motor and wire, platen unit, line feed motor that rotates the platen, paper feed mechanism and paper bail solenoid are installed on the chassis.

3. Logic control unit

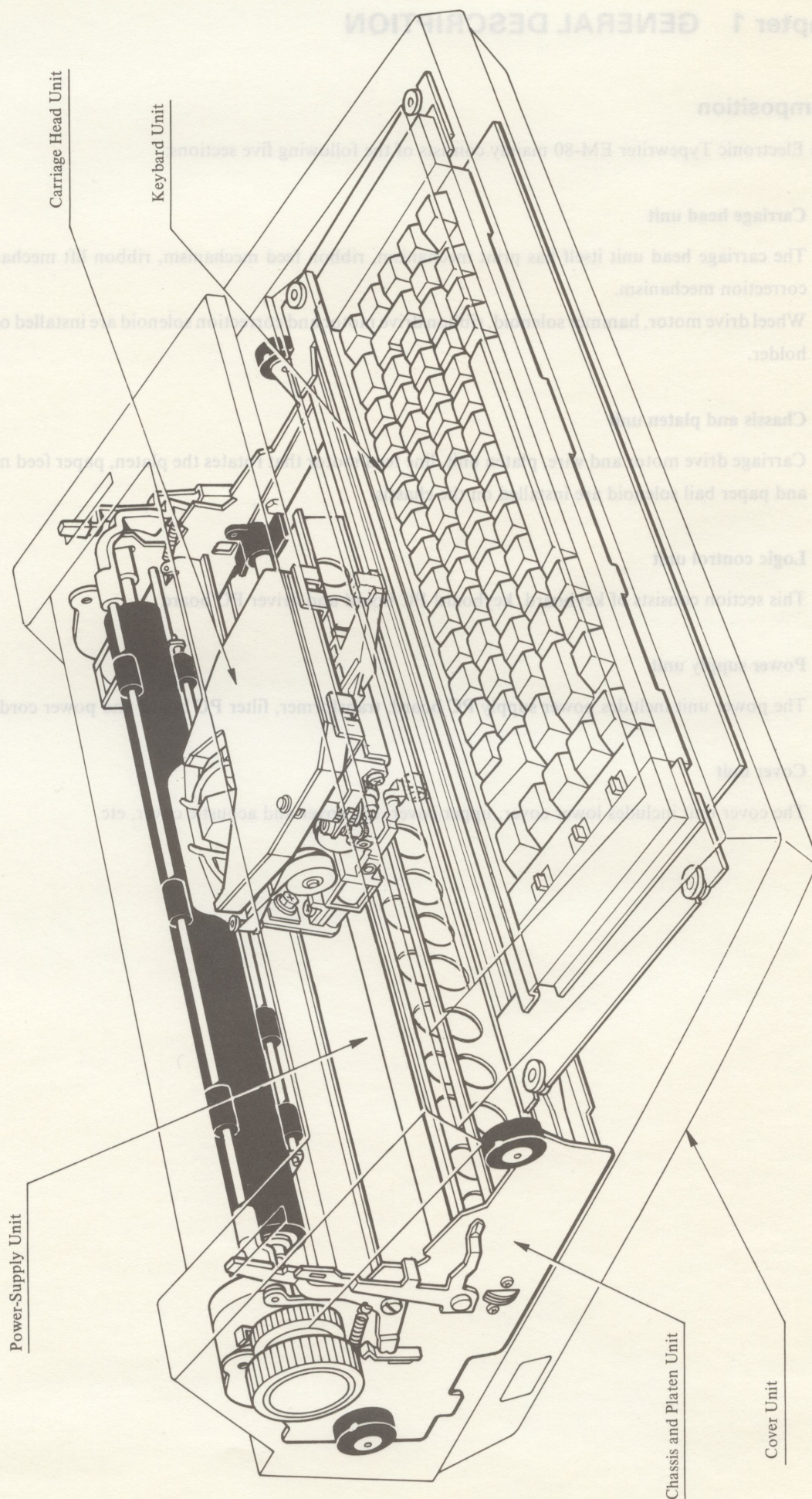
This section consists of keyboard, keyboard PC board and driver PC board

4. Power supply unit

The power unit includes power supply PC board, transformer, filter PC board and power cord.

5. Cover unit

The cover unit includes lower cover, upper cover, top cover and acoustic cover, etc.



Chapter 2 MECHANICAL SECTION

The mechanisms of Electronic Typewriter EM-80 include the following:

1. Print mechanism
2. Carriage movement mechanism
3. Ribbon lift mechanism
4. Ribbon feed mechanism
5. Correction mechanism
6. Paper meter
7. Head indicator
8. Relay circuit board
9. Platen
10. Platen drive mechanism
11. Paper holder/paper release mechanism
12. Automatic paper inserting mechanism
13. Cover switch

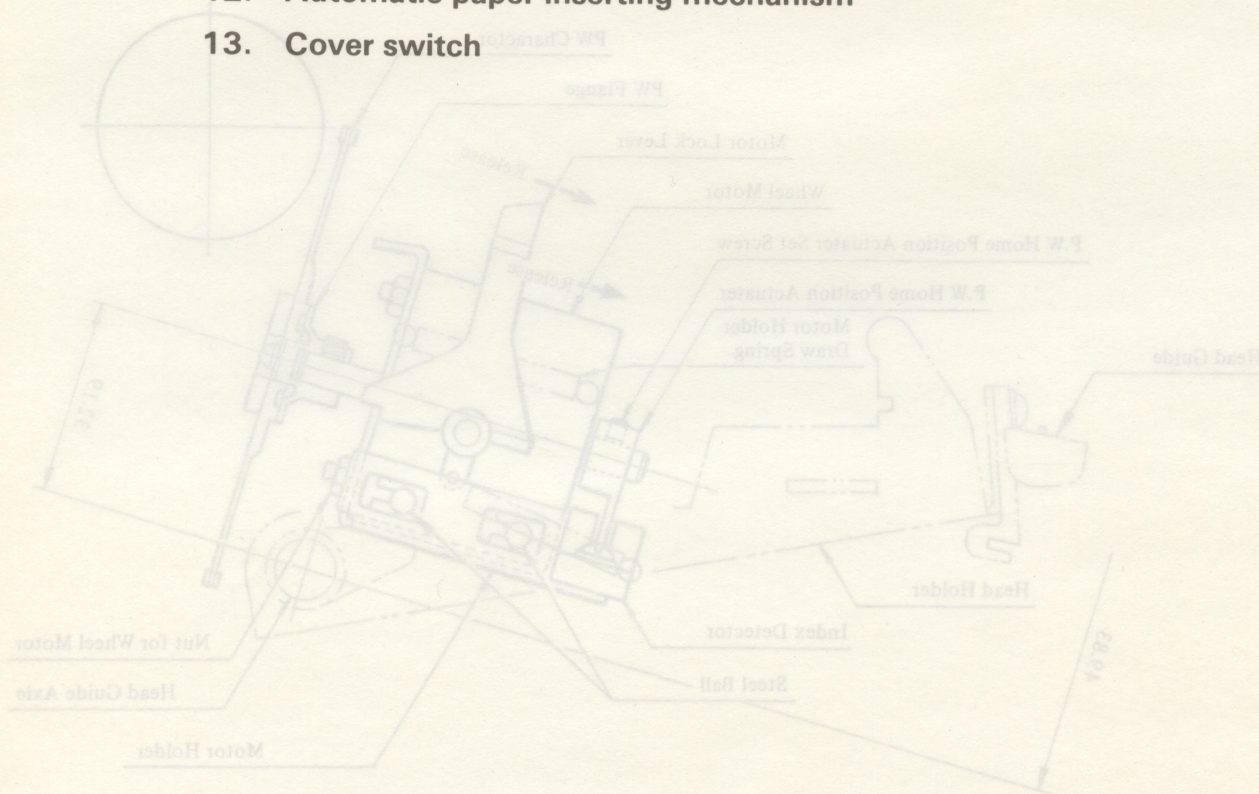


Fig. 1-1

1. Print mechanism

A daisy wheel is used for character elements in the EM-80, and driven and indexed by wheel motor (stepping motor). Select and indexed character is printed by mechanical impact that is given by hammer solenoid.

1-1 Wheel motor

The wheel motor is mounted on the motor holder. The motor holder itself is installed to the carriage through motor holder guides on one side, and steel balls on the other side, to that it can be locked in position by motor lock lever and released from locking.

The wheel motor shaft has a wheel flange and daisywheel on the platen side, and wheel motor is stopped at its home position by the wheel positioning actuator and index detector. When the wheel is indexed at its home position, the character at the home position is “,”.

The next figure shows the dimensional relationship of the head guide shaft, wheel motor and head guide, where the wheel motor has been installed to the motor holder and the head holder, and positioned horizontally.

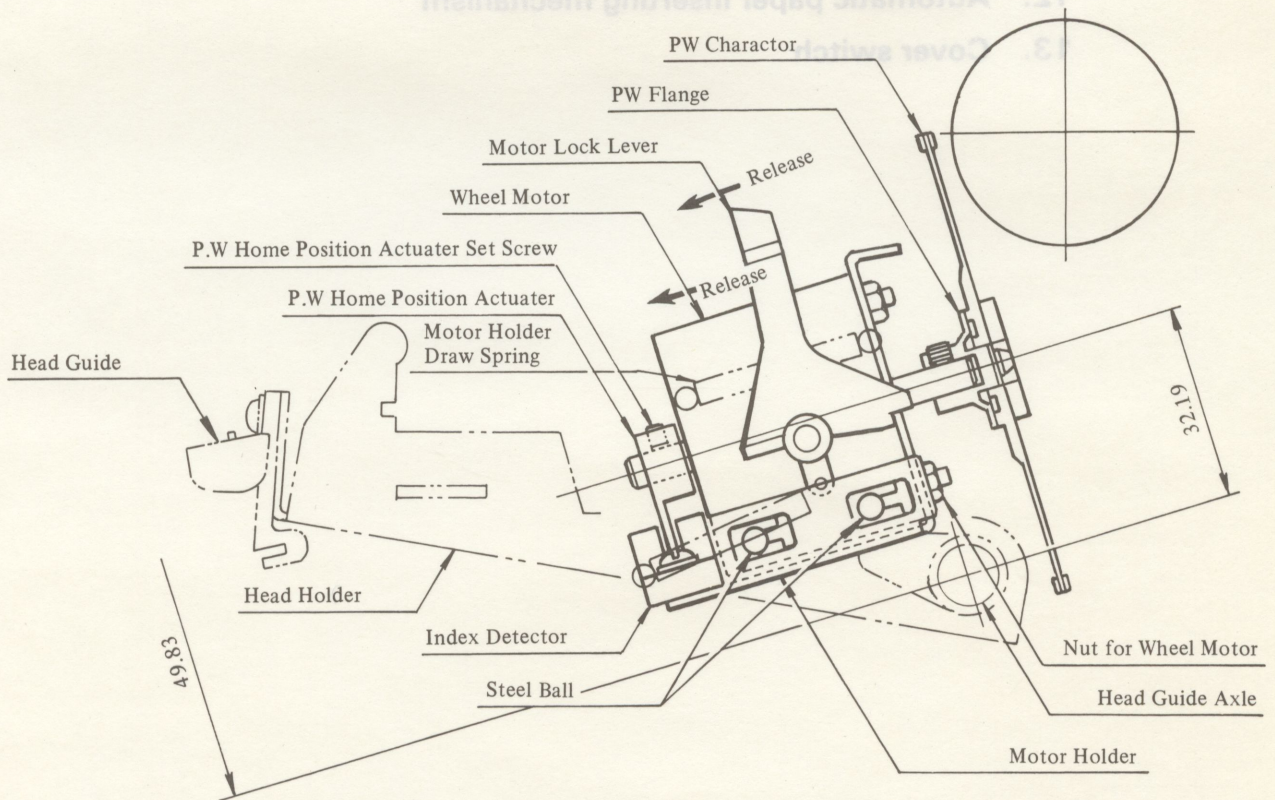


Fig. 1-1

1-2 Print hammer solenoid

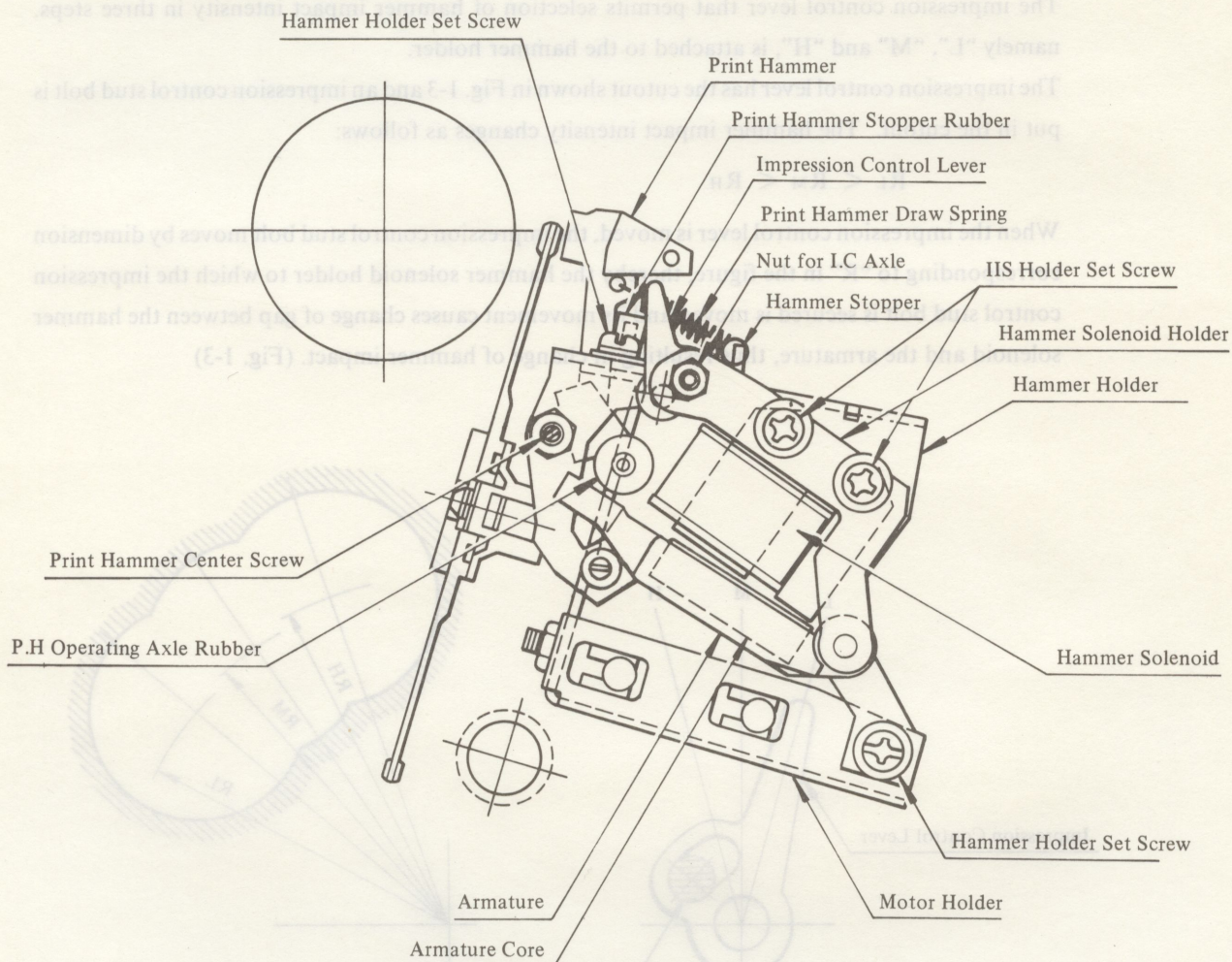


Fig. 1-2

The print hammer is secured to the hammer holder with hammer center screw. When the hammer solenoid is energized, the armature is pulled and the hammer is driven through hammer drive rubber ring.

The hammer is at its home position when it is in contact with hammer rubber stopper. The hammer is always pulled by hammer spring.

Hammer impact is variable in four intensities, which depends on the style of characters, and governed by pull of hammer solenoid and dimensional relationships between the hammer and the armature, and the armature and the hammer solenoid. (Fig. 1-2)

1-3 Impression control lever

The impression control lever that permits selection of hammer impact intensity in three steps, namely "L", "M" and "H", is attached to the hammer holder.

The impression control lever has the cutout shown in Fig. 1-3 and an impression control stud bolt is put in the cutout. The hammer impact intensity changes as follows:

$$R_L < R_M < R_H$$

When the impression control lever is moved, the impression control stud bolt moves by dimension corresponding to "R" in the figure, thereby the hammer solenoid holder to which the impression control stud bolt is secured is moved and its movement causes change of gap between the hammer solenoid and the armature, thus resulting in change of hammer impact. (Fig. 1-3)

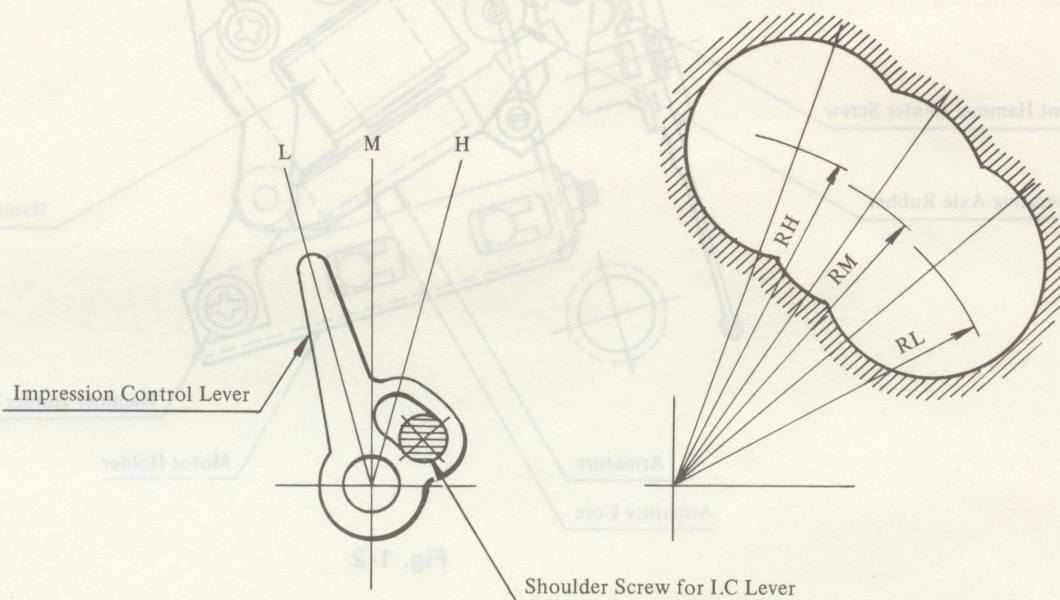


Fig. 1-3

1-4 Daisywheel loading/unloading mechanism

Cassette type daisywheel can be loaded and unloaded for replacement in the following steps of procedure:

< Unloading the daisywheel >

- (1) Open the top cover. The cover switch will turn off the 24V DC source.
- (2) Pull the wheel motor lock lever. The wheel motor holder will be unlocked and the wheel motor will slide toward the keyboard.
- (3) When the wheel motor moves, the wheel is disengaged from the PW flange.
- (4) Pick up the daisywheel cassette to take it out from the PW cassette guide.

< Loading the daisywheel >

- (1) Put downward the daisywheel cassette into the PW cassette guide.
- (2) Depress the hammer cover to slide the wheel motor forward (toward the platen).
- (3) The wheel clamp spring moves the PW flange and the daisywheel is engaged with the PW flange.
- (4) When the wheel is engaged, the wheel motor holder is locked in position by the motor lock lever and the wheel motor is set in position.
- (5) When the top cover is closed, the 24V DC source is turned on and the wheel motor starts rotating clockwise.

The wheel rotates for a while when its motor is turned on, and is stopped by the stopper of PW cassette guide.

Even after the wheel stops, the wheel flange goes on rotating, sliding on the wheel.

When the notch of PW flange reaches the pin stopper and the pin stopper gets in the notch, the pin retracts letting engage the wheel with the PW flange and therefore the wheel starts rotating again.

The wheel motor stops when the wheel is indexed to its home position, thereby the wheel becomes ready for typing. (Fig. 1-4)

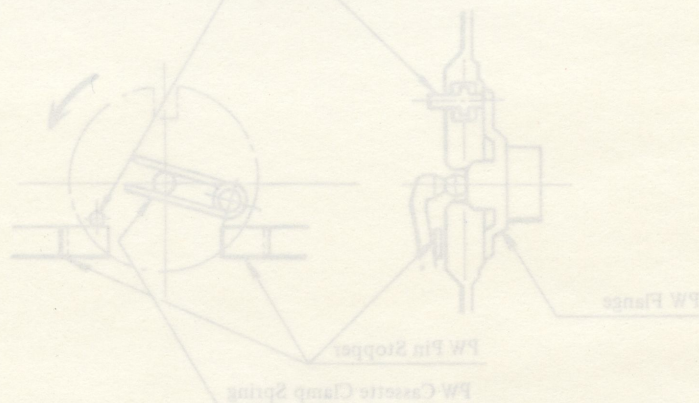


Fig. 1-4

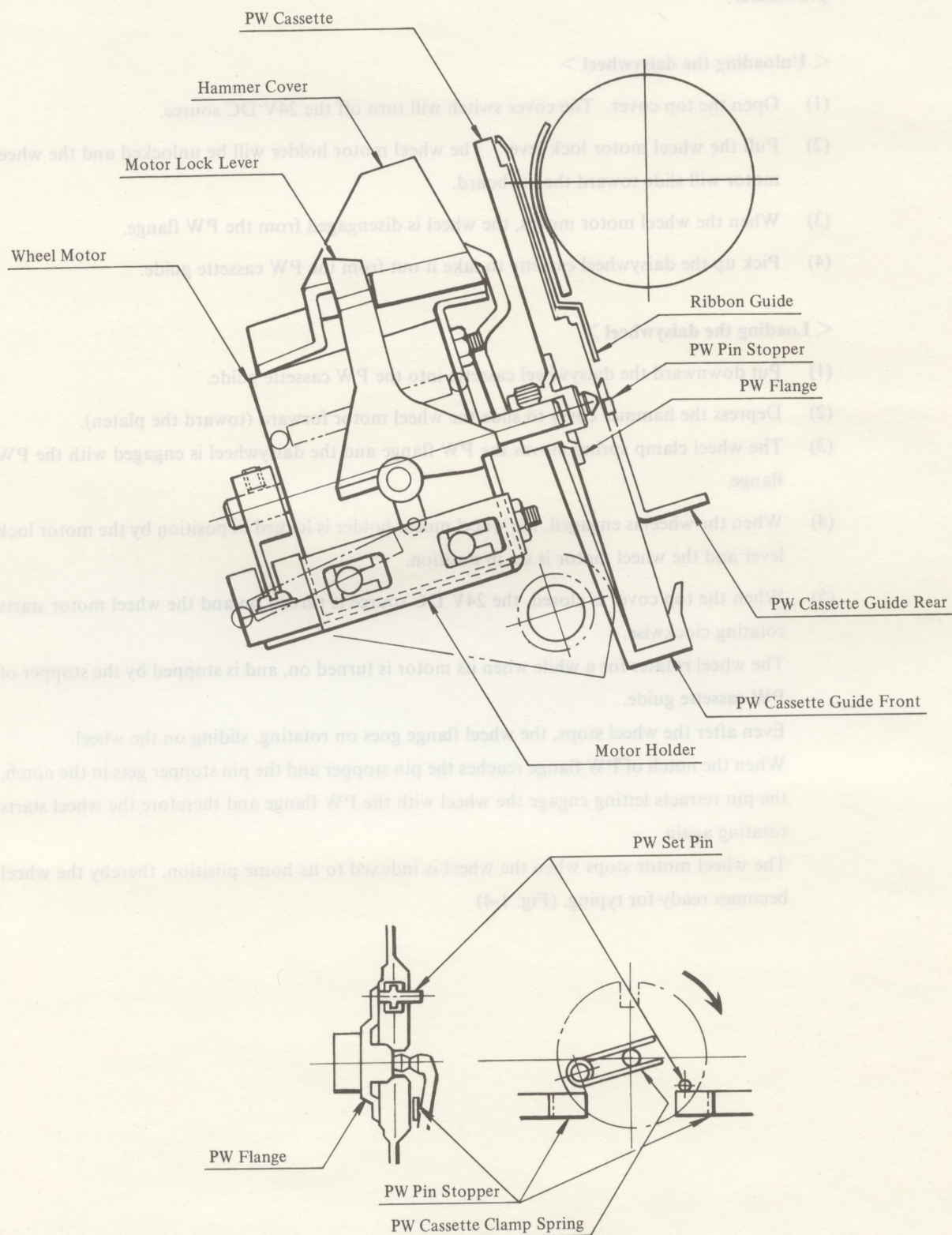


Fig. 1-4

2. Carriage movement mechanism

Movement or motion associated with the carriage, such as letter escape, spacing, back spacing, tabulation and return, are controlled by the carriage movement mechanism having carriage motor for driving means. The carriage movement mechanism consists of drive pulley, tension pulley and carriage drive wire as shown below. (Fig. 2-1)

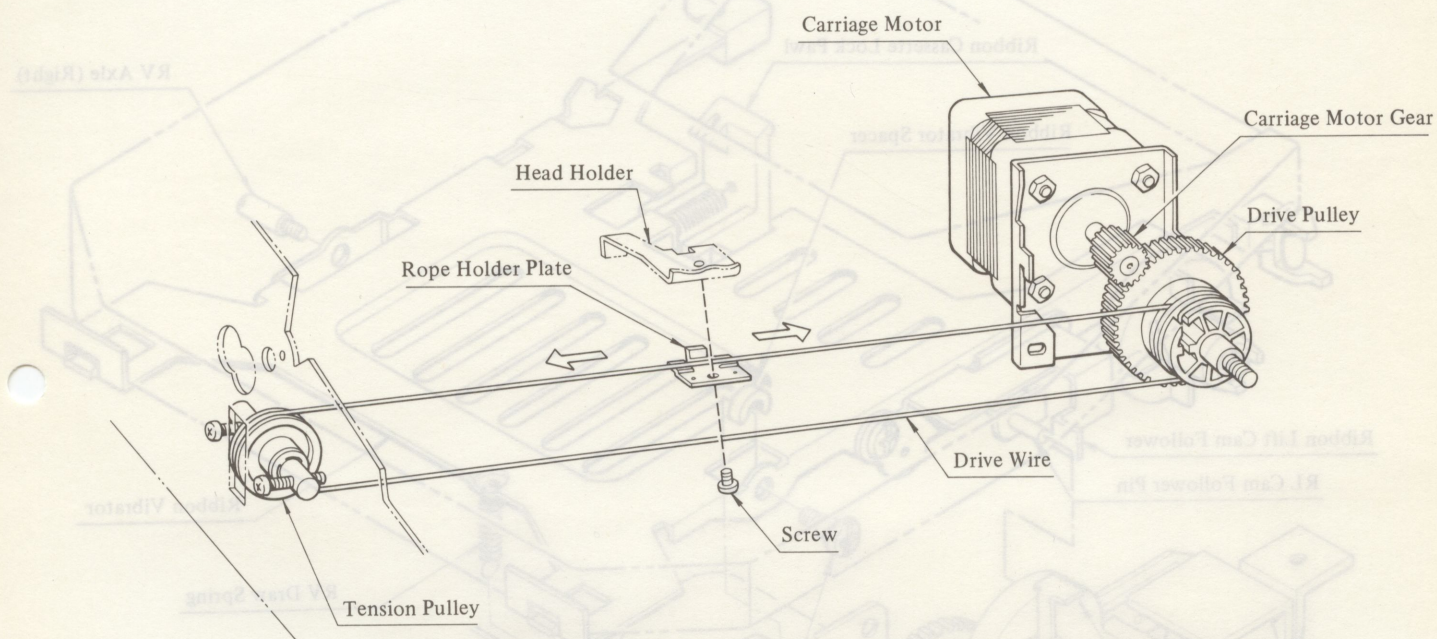
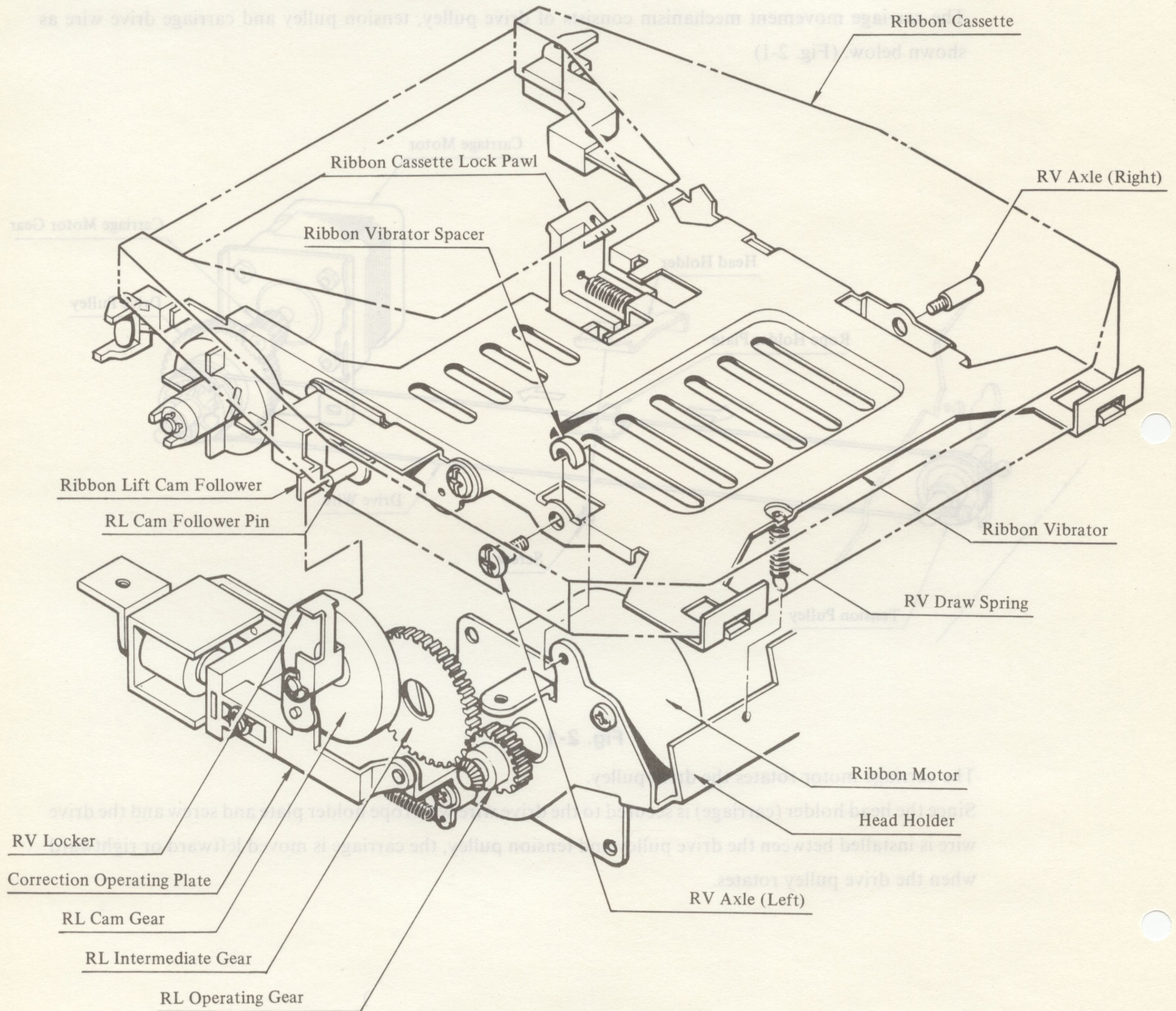


Fig. 2-1

The carriage motor rotates the drive pulley.

Since the head holder (carriage) is secured to the drive wire with rope holder plate and screw and the drive wire is installed between the drive pulley and tension pulley, the carriage is moved leftward or rightward when the drive pulley rotates.

3. Ribbon lift mechanism



Ribbon cassette is placed on the ribbon vibrator, and locked in position by ribbon cassette lock pawls that enter the holes found at left and right front portions of ribbon vibrator. Therefore, the ribbon cassette moves together with the ribbon vibrator.

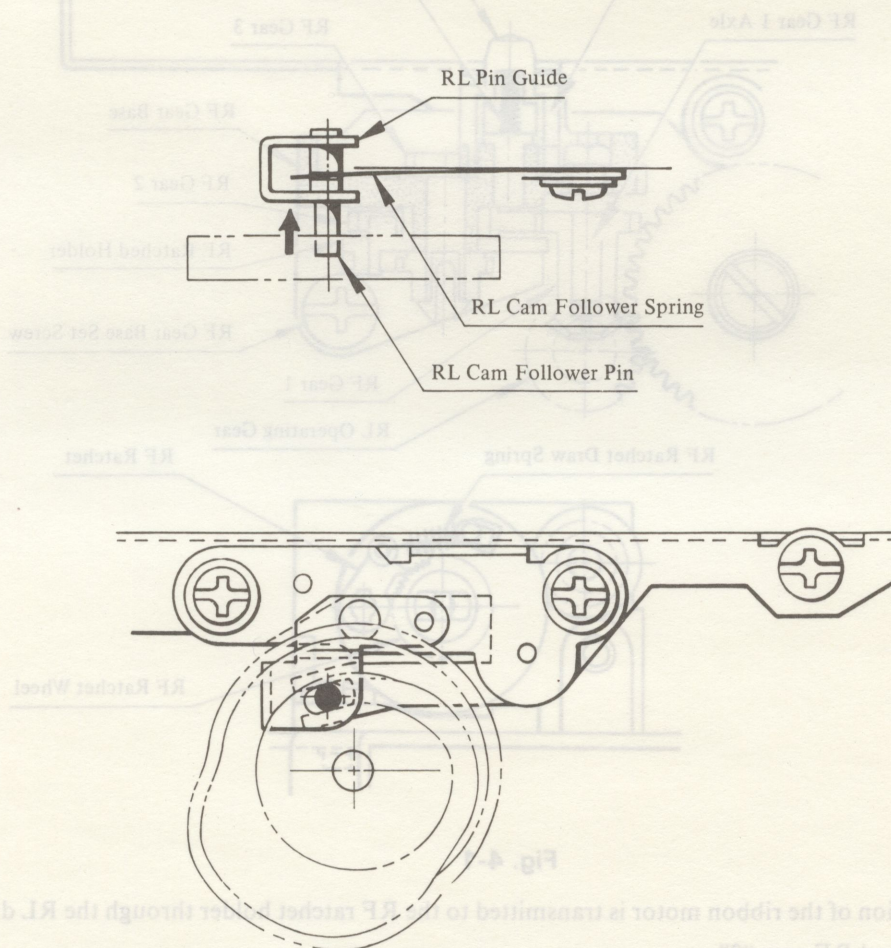
The ribbon vibrator itself is driven by ribbon motor and its motion is as follows:

- 1) When the ribbon motor runs, the RL cam is driven to rotate through RL drive gear and RL Intermediate gear.
- 2) When the RL cam gear rotates, the RL cam follower pin goes up sliding along the cam surface, lifting the ribbon vibrator until the RL cam follower strikes against the RV locker.
- 3) After a character is printed, the RL cam gear rotates in inverse direction (rotation of the ribbon motor is reversed) and the ribbon vibrator returns to its home position.
- 4) When a key is depressed again within 100 msec after the previous printing, or printing is repeated, rotation of the ribbon motor is not reversed, but remains in the same direction.

In this case, the ribbon vibrator does not return to the home position, and remains at the lifted position.

If the RL cam gear goes on rotating in the same direction, the RL cam follower pin comes to the cam portion where the contour is oblique (crossing point with cam home position) and the RL cam follower pin is pressed down by the contour.

When the RL cam gear rotates to a certain degree over the oblique portion, the RL cam follower pin is returned by the RL cam follower spring.



4. Ribbon feed mechanism

The ribbon feed mechanism is driven by ribbon motor.

The cross slit of ribbon cassette placed on the ribbon vibrator is engaged with the RF joint. The ribbon motor rotates the RF joint, and causes ribbon feeding. (Fig. 4-1)

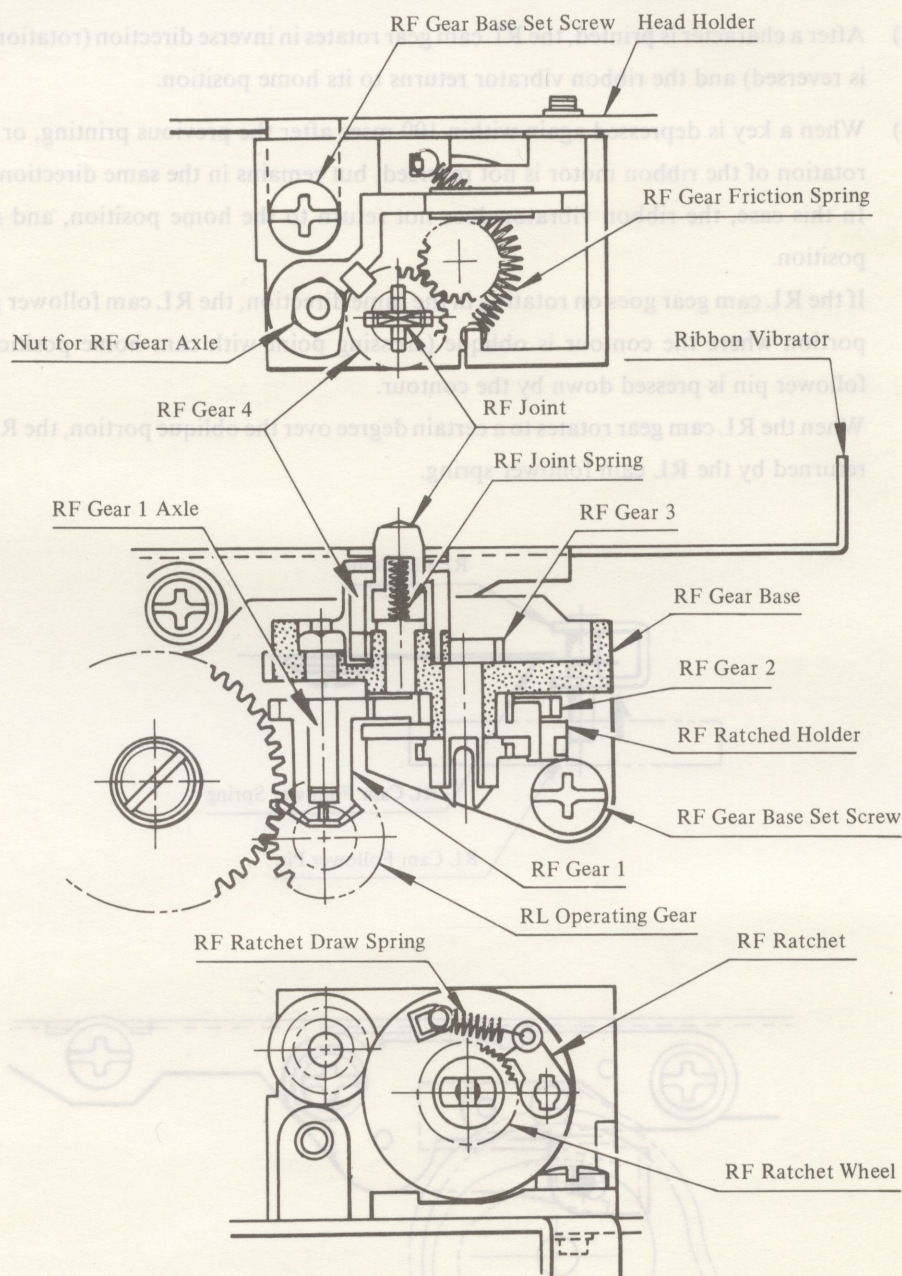


Fig. 4-1

The rotation of the ribbon motor is transmitted to the RF ratchet holder through the RL drive gear, RF gear "1" and RF gear "2".

The RF ratchet holder has the RF ratchet which is engaged with the RF ratchet wheel through the RF ratchet spring permitting rotation of the RF ratchet wheel in only one direction.

The rotation of the RF ratchet wheel is transmitted to the RF joint through the RF gear "3" and RF gear "4".

When the ribbon motor rotates in the inverse direction, the RF ratchet releases the ratchet wheel and the friction caused by the RF gear frictional spring being in contact with the RF gear "3" prevents inverse rotation of the RF ratchet wheel.

The ribbon is feed by rotation of the RF joint put into the cross slit of the ribbon cassette. It is likely that the RF joint is not properly put into the cross slit when the ribbon cassette is loaded and the RF joint is pressed by the ribbon cassette. In this case, the knob of ribbon cassette should be turned by hand so that the cross slit meets the RF joint, thereby the RF joint is pulled up by the RF joint spring and the RF joint enters in the cross slit.

5. Correction mechanism

The correction mechanism mainly consists of correction tape lift movement and correction tape feed movement.

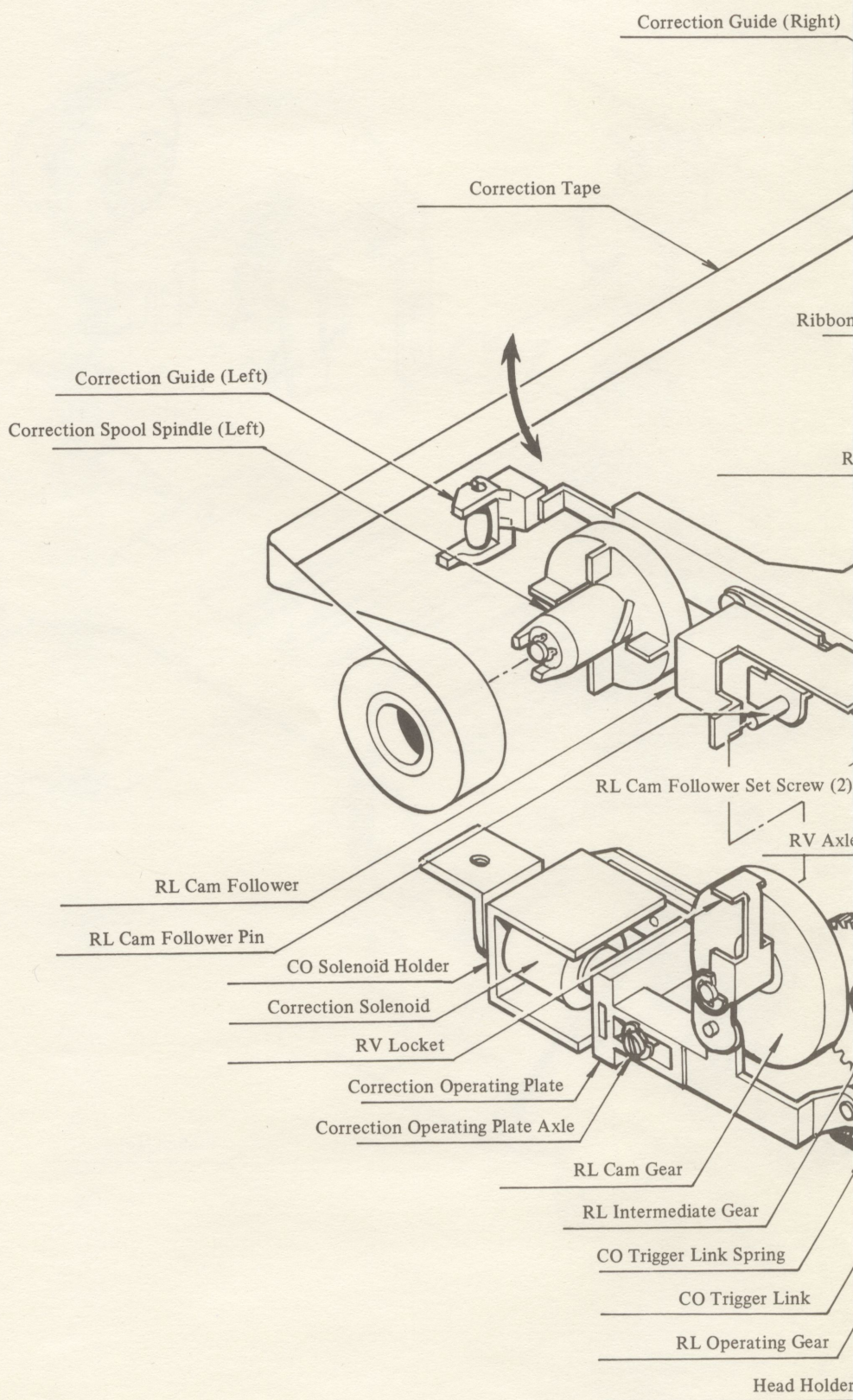
- 1) Character to be erased for correction is selected.
- 2) The correction solenoid is turned on to actuate the correction drive link which in turn lifts the RV locker to the position where the RV locker does not contact with the RL cam follower when the ribbon vibrator is lifted.
- 3) The ribbon motor runs and rotates the RL cam gear through the RL drive gear and RL idle gear.

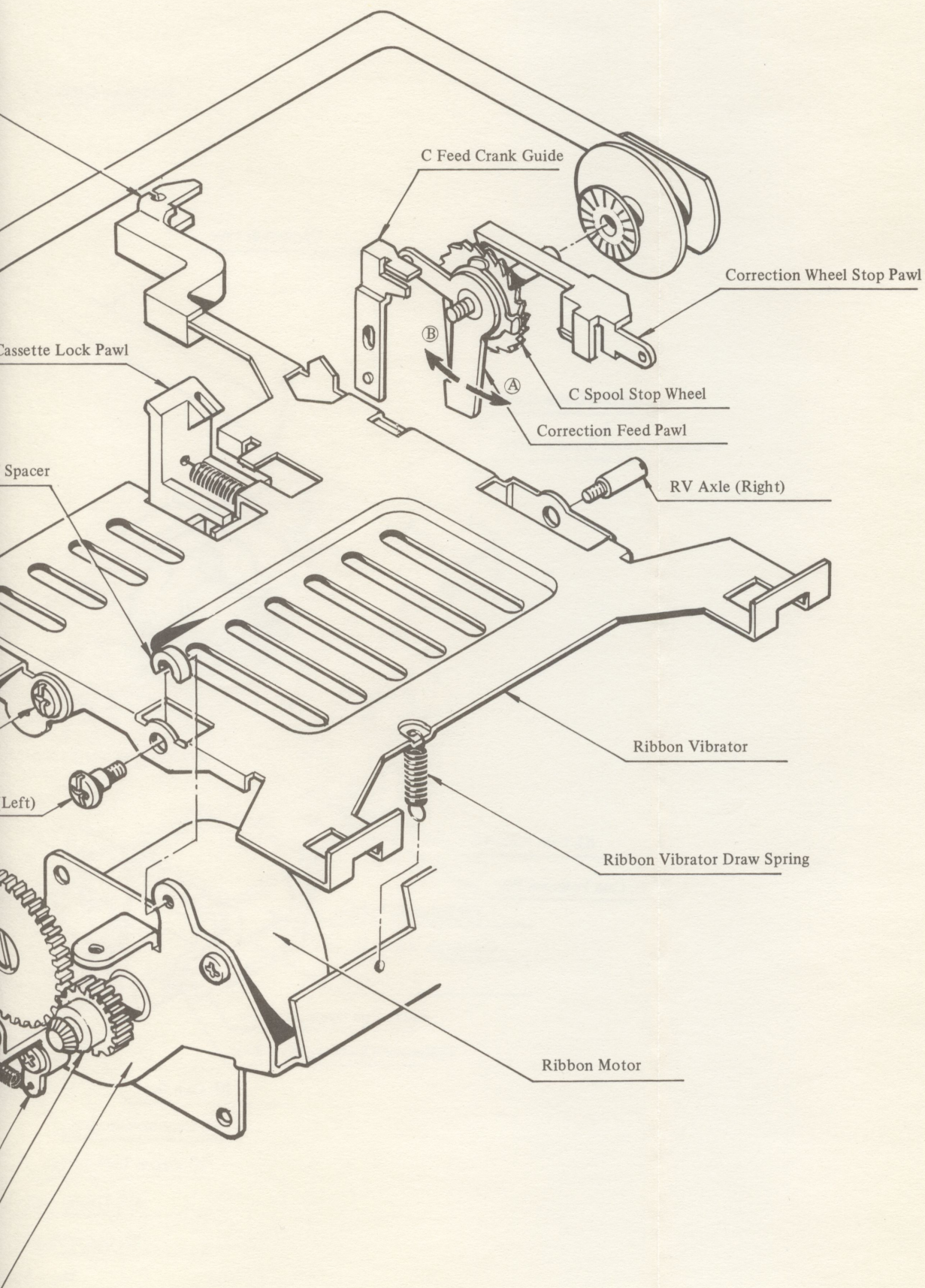
When the RL cam gear rotates, the RL cam follower pin goes up sliding along the RL cam surface, thus lifting the ribbon vibrator until the correction tape reaches the position where character is erased. Since the RV locker remains free of contact with the RL cam follower, it further goes up to the position corresponding to the upper dead position of the RL cam.

- 5) Then the print hammer solenoid is energized and the character is erased.
- 6) The ribbon motor rotates in inverse direction, causing inverse rotation of the RL cam gear, to return the ribbon vibrator to its home position.
- 7) The correction tape is feed each time the ribbon vibrator goes up and down.

Because the correction feed pawl is held on one side by the correction feed crank guide when the ribbon vibrator goes up, the correction feed pawl swings in direction Ⓐ indicated by arrow in the following figure.

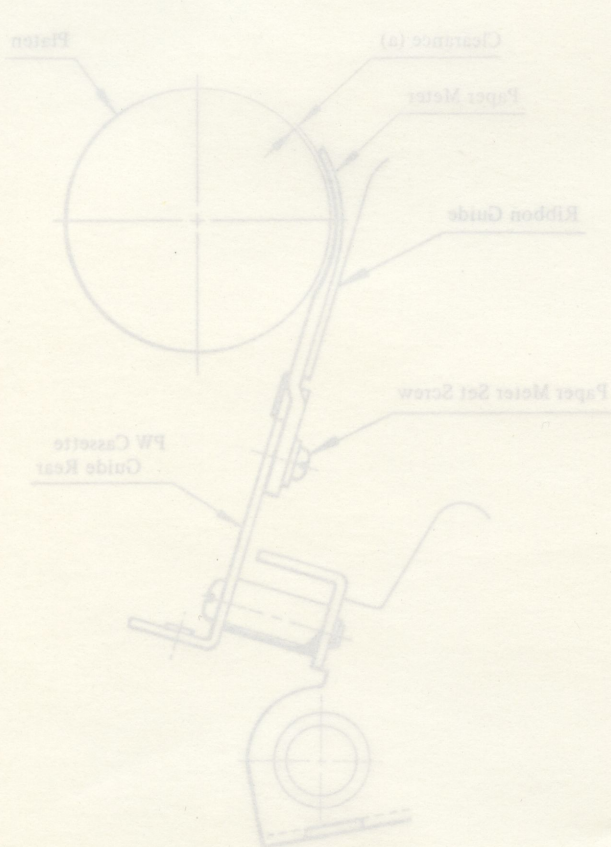
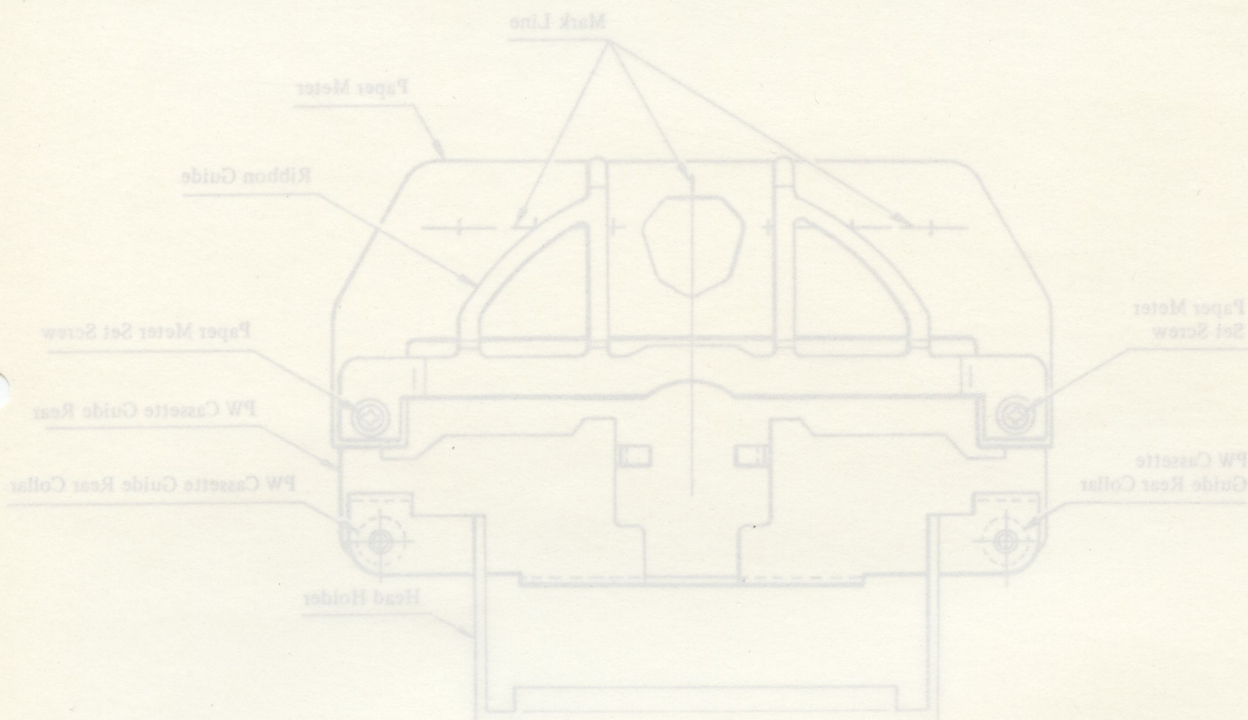
Correction Mechanism





When the correction feed pawl swings, the correction spool stop wheel does not move because it is locked by the correction wheel stop pawl and the correction feed pawl is engaged with the next tooth of correction spool stop wheel.

When the ribbon vibrator goes down, the correction feed pawl swings in direction ⑧ permitting one step advance to the correction spool stop wheel. The movement of the correction spool stop wheel is restricted to one step by the correction wheel stop pawl, and feeds the correction tape step by step.

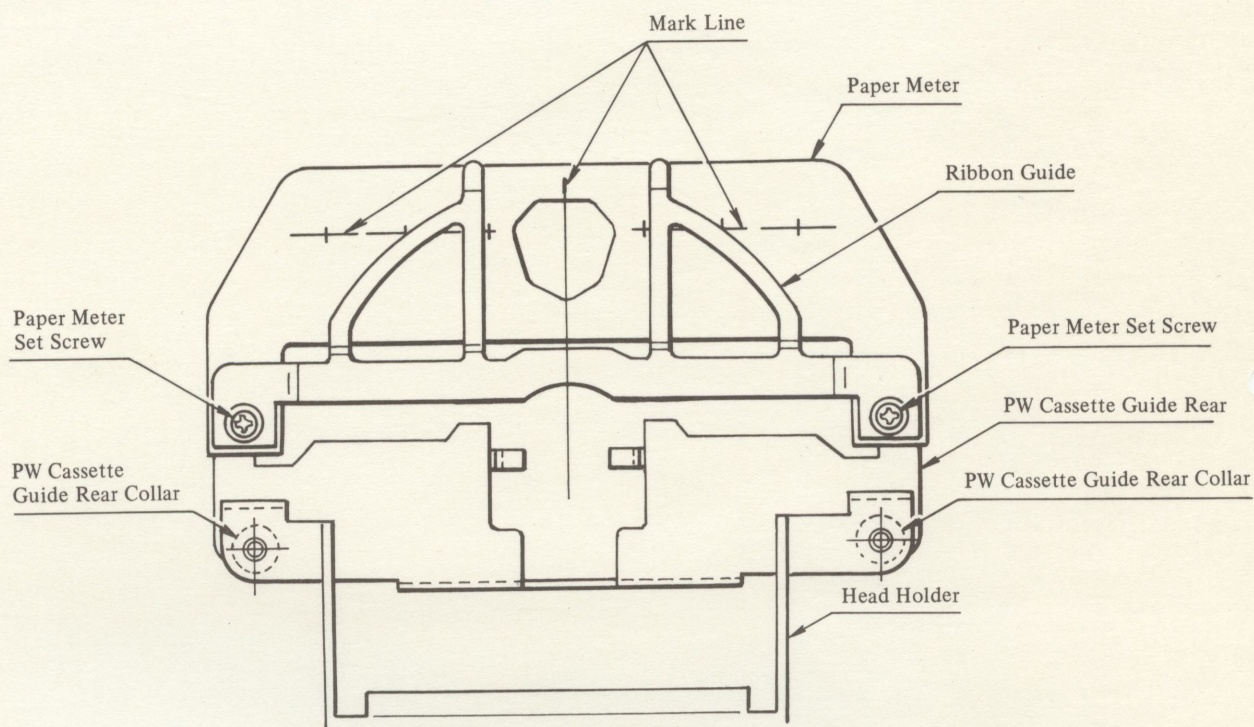


a) Clearance (a) between the paper meter and the platen should be within a range from 0.1 mm to 0.3 mm. To adjust the gap, bend the rear print wheel cassette guide properly.

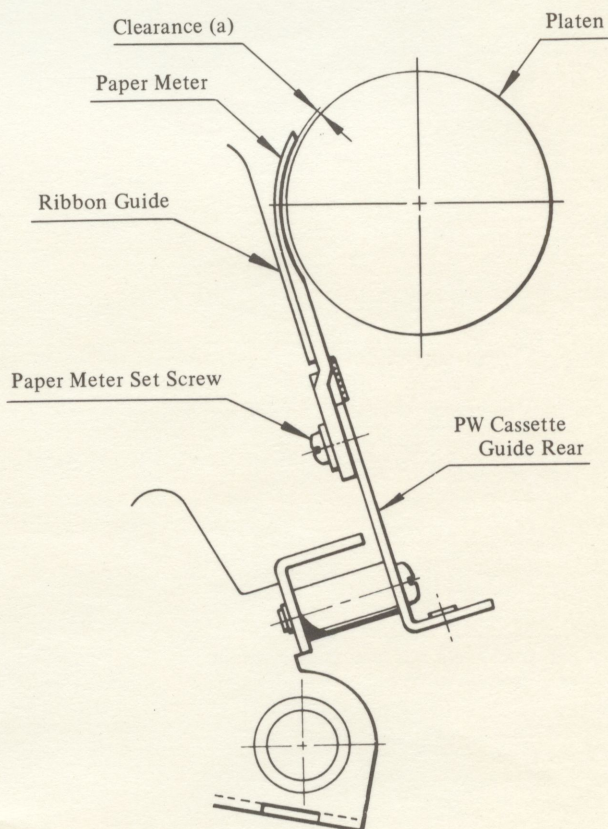
6. Paper meter

The paper meter has a red vertical line and a horizontal line that help the typist to find character center position and lowermost position of standard character (H).

The gap between the paper meter and the platen is very important for secure holding of paper, and should be adjusted within a range from 0.1 mm to 0.3 mm by properly bending the cassette guide rear.



- a) Clearance (a) between the paper meter and the platen should be within a range from 0.1 mm to 0.3 mm.
To adjust the gap, bend the rear print wheel cassette guide properly.



7. Head indicator

The head indicator is secured to the head holder unit.

The red LED indicates the carriage head center position and the current position of the head can be read on the margin scales base.

The head indicator LED lights as far as the power switch is set at ON. (Fig. 7-1)

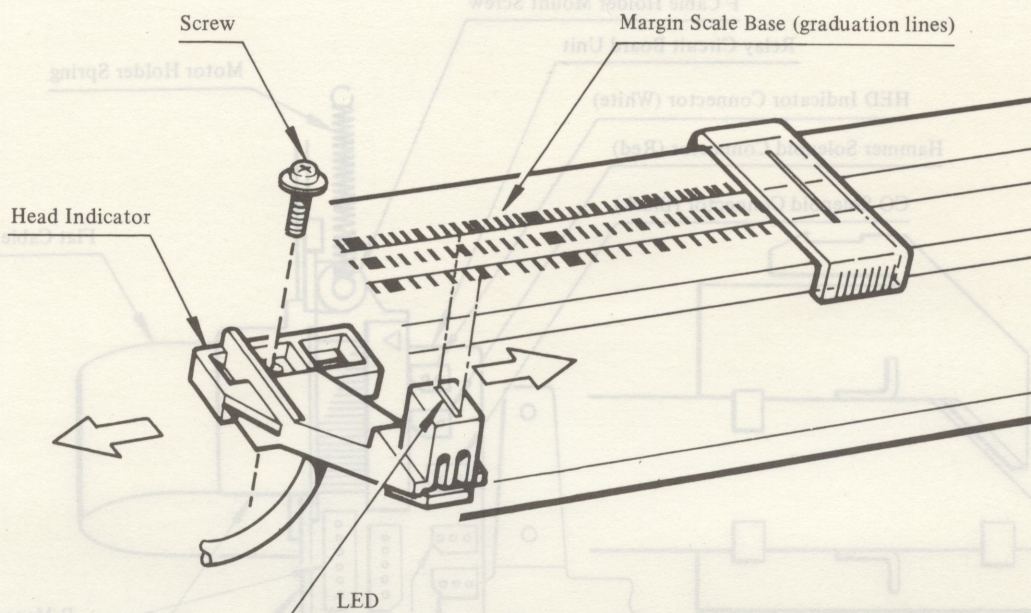


Fig. 7-1

8. Relay circuit board

The wheel motor, wheel motor indexing detector, print hammer solenoid, ribbon motor, ribbon lift solenoid, correction solenoid and head indicator are installed on the carriage head. The relay circuit board is necessary for connection of leads from these devices or units on the carriage head. (Fig. 8-1)

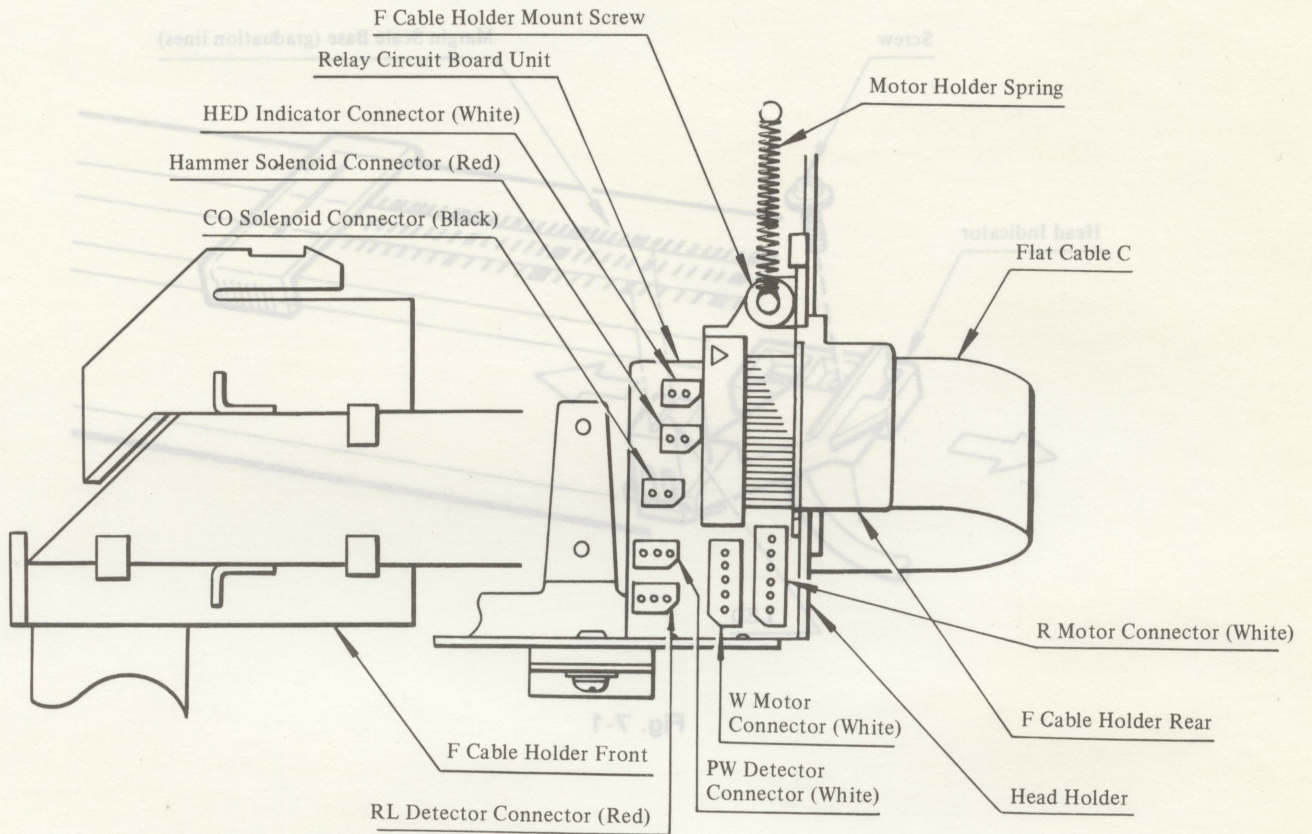


Fig. 8-1

9. Platen

The platen can be easily removed and installed for cleaning of the paper meter.

The next figure shows the construction of the platen. The left and right platen bearings are secured to the chassis, and permit rotation of the platen. A groove is made in the left platen bearing for easy positioning of the bearing in reference to the chassis.

The platen gear that transmits rotation of the LF motor to the platen is located on the left side, and secured to the platen shaft with set screw.

The left and right platen knobs are capable of freely rotating on the platen shaft and therefore the platen cannot be rotated by turning the left or right knob when the knob is at the usual position.

The platen knobs are pushed outward by incorporated compression spring. When platen knob is pressed inward, the knob is engaged with the platen, permitting rotation of the platen. The construction of platen knob does not differ from the left one to the right one.

The platen is capable of minutely feeding paper ($1/48''$) by manually turning either knob. (Fig. 9-1)

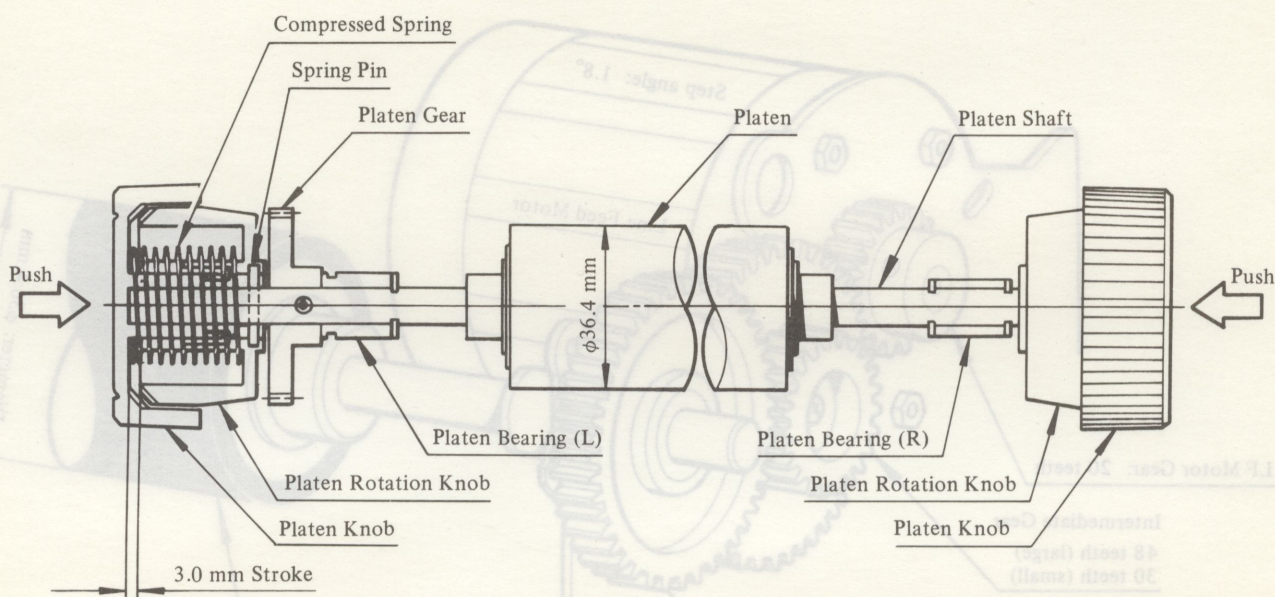


Fig. 9-1

10. Platen drive mechanism

The platen drive mechanism transmits rotation of the stepping motor (line feed) motor to the platen through gearing.

The line feed motor installed on the chassis has the LF motor gear which, in association with the intermediate gear and platen gear, transmits rotation of the line feed motor to the platen. Stepping angle of the line feed motor is 1.8 deg. and one revolution of motor shaft is 200 steps.

Each one step motion of the line feed motor corresponds to movement of $1/192''$ on the platen surface. Although the lease line feed by depressing ther return key is $1/12''$, paper can be fed by $1/48''$ as mentioned in the previous section.

This fine line feed is based on the principle that the line feed motor holds the platen with large excitation force while the motor is running, or during hammering, but with faint excitation force while the motor is not running, thus faint excitation force while the motor is not running, thus permitting the typist to minutely advance ($1/48''$) the platen by hand. (Fig. 10-1)

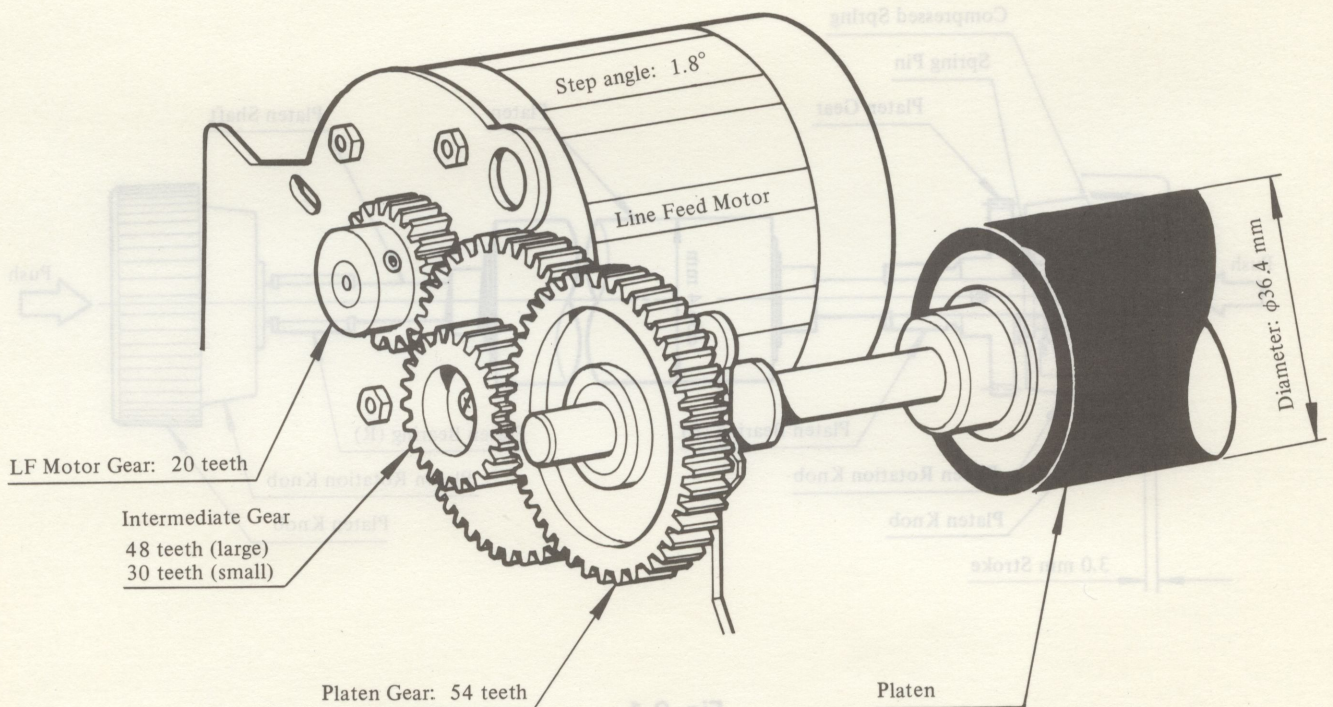


Fig. 10-1

11. Paper hold feed mechanism and paper release mechanism

Paper feed rollers located under the platen hold an inserted paper in position and guides the paper for accurate line feeding.

They are installed on the paper feed roller arm and, pivoting around the paper feed roller arm shaft, pressed against the platen by spring.

There are front paper feed rollers and rear paper feed rollers. In order to assure stable paper feeding, particularly when plural sheets of paper are inserted, pressure of front paper feed roller arm is smaller as compared with that of rear paper feed roller arm.

Paper bail rollers are also pressed against platen by spring so that the inserted paper is stably feed in line.

For insertion and/or alignment of paper, it will be necessary to release the paper from pressure of the paper feed rollers. When the paper release lever is pulled, the cam shaft turns and opens the paper feed roller arm, developing a gap between the paper feed rollers and the platen. (Fig. 11-1)

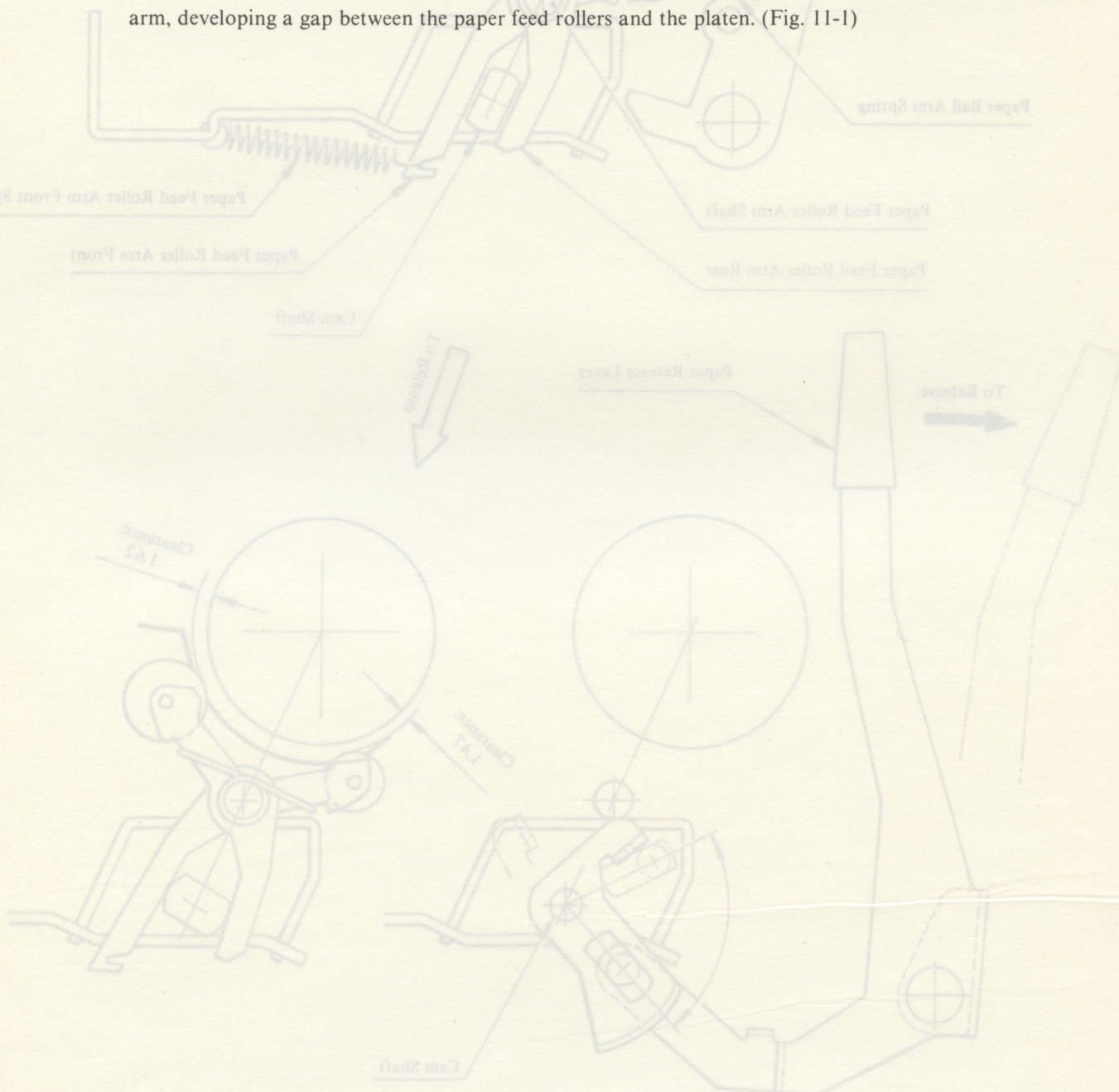


Fig. 11-1

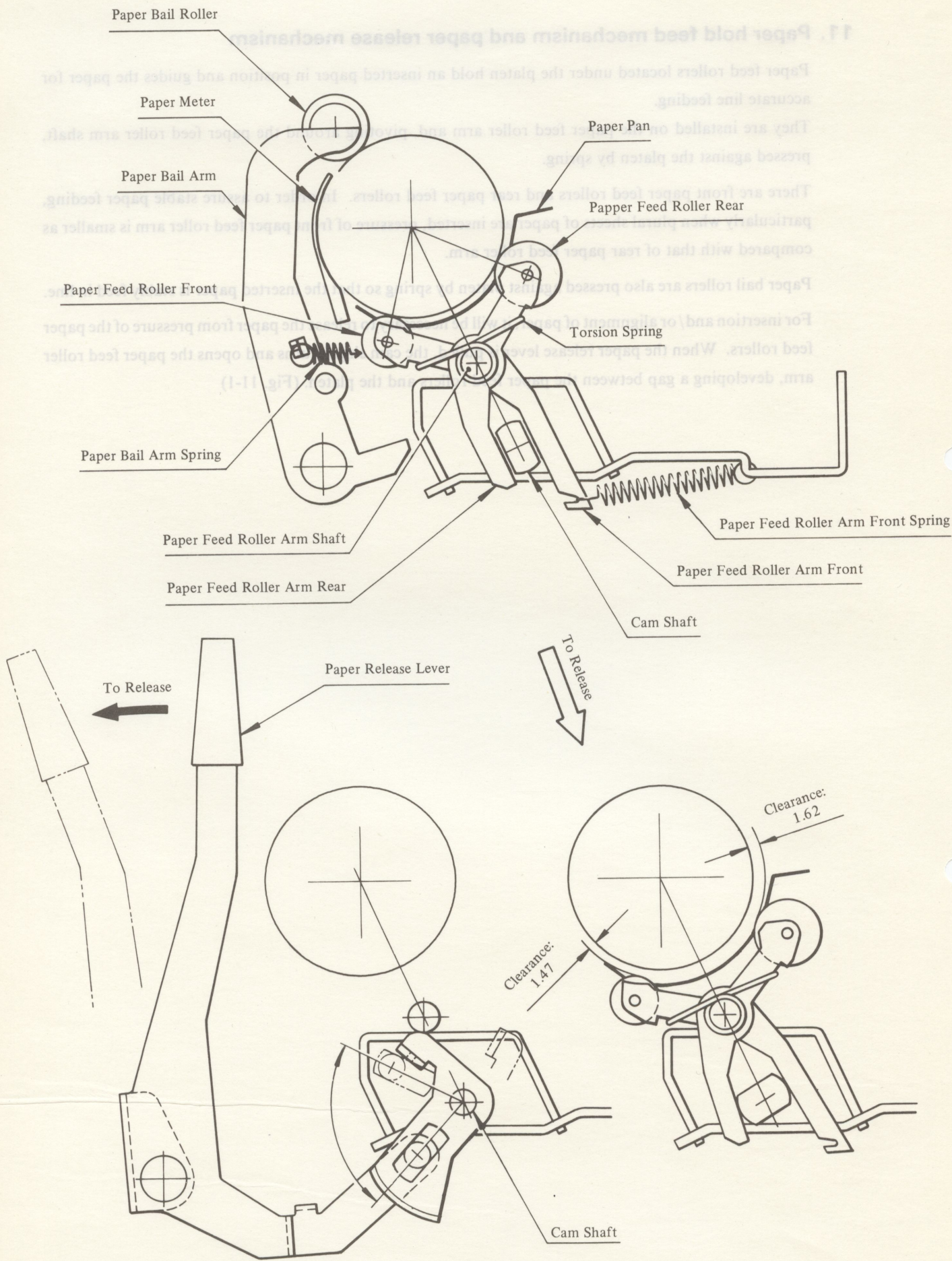


Fig. 11-1

12. Automatic paper insertion mechanism

An inserted paper can be automatically positioned for immediate typing by this mechanism.

Its operation is as follows:

- 1) When the paper release lever is pulled, the cam shaft turns and a gap is developed between the rear paper feed rollers and the platen enabling the typist to insert a paper (refer to the description in section 11 for details).

When the cam shaft turns, the paper stopper arm is pulled by spring, and swings around the paper feed roller arm shaft.

Since the paper stopper is linked with the paper stopper arm, the swung paper stopper comes into contact with the platen.

- 2) When a paper is slipped into the gap between the platen and the rear paper feed rollers, being guided by the paper pan, the paper stops on the paper stopper, and is aligned.
- 3) When the paper release lever is returned, the rear paper feed rollers press the paper against the platen. With the paper release lever operation, the paper stopper leaves the platen, permitting paper line feeding.

- 4) When key  of keyboard is depressed, the line feed motor starts running and the inserted paper is feed. At the same time, the paper bail solenoid pushes the paper bail drive bar and the paper bail arm, thereby the paper bail rollers leave the platen. The carriage head returns to the center of the platen and the paper passes, being guided with the platen and paper meter, through the gap between the platen and the paper bail rollers.

- 5) When the paper bail solenoid is turned off, the paper bail arm spring pulls the paper bail arm and therefore the paper is pressed against the platen by the paper bail rollers. (Fig. 12-1)

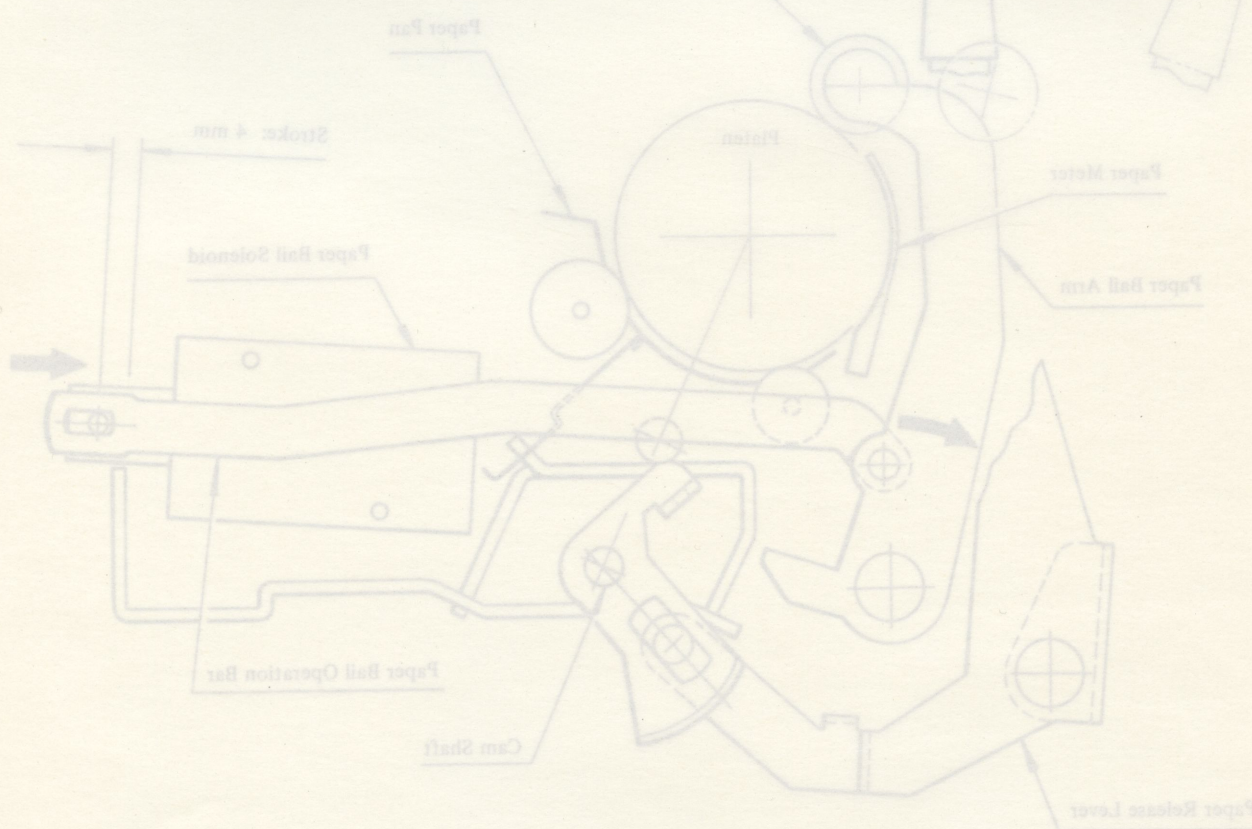


Fig. 12-1

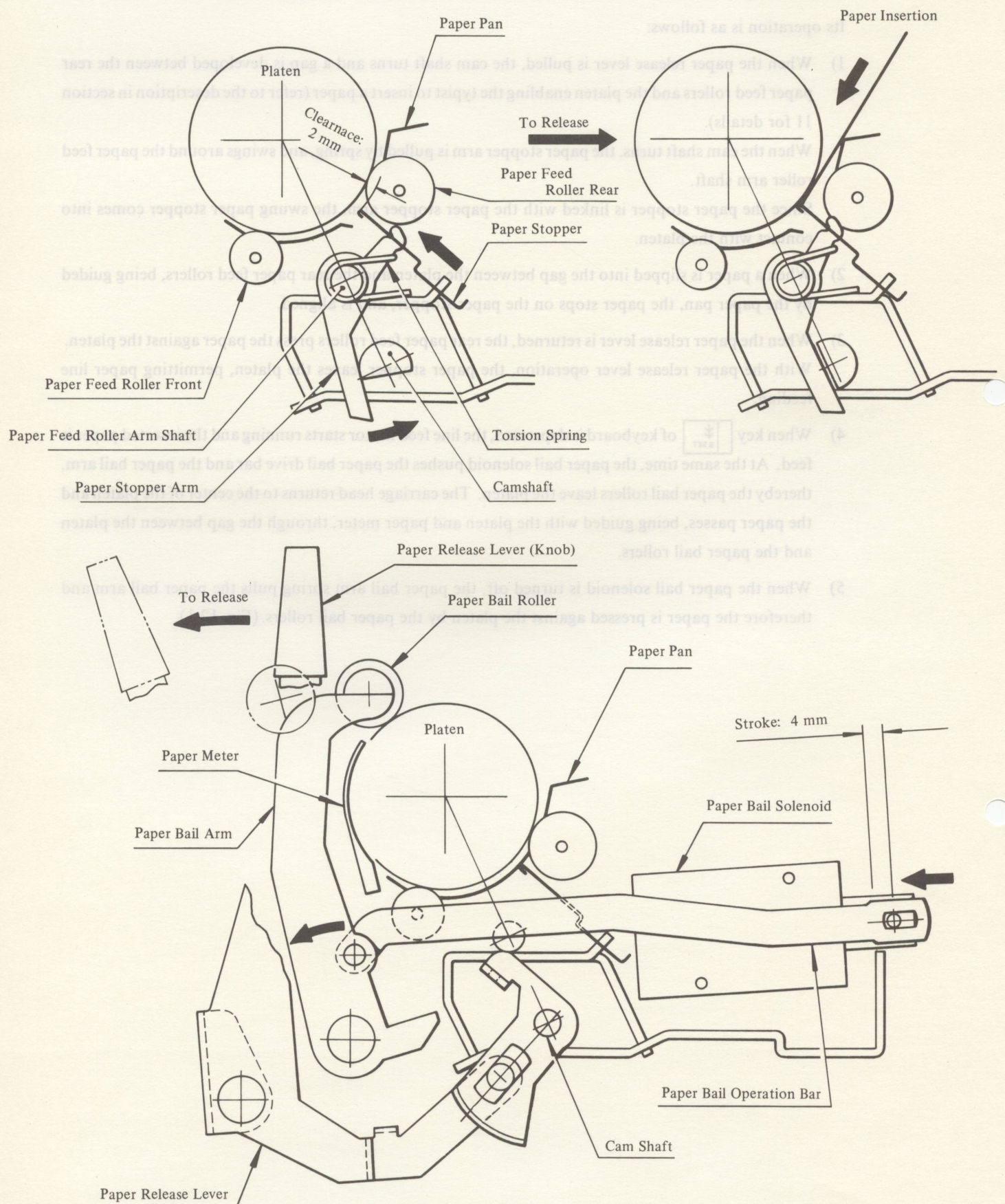


Fig. 12-1

13. Cover switch

The cover switch is provided to turn off the 24V DC source for safety when the top cover is opened for replacement of ribbon or correction tape, or the like.

Therefore, key operation is ignored and the carriage motor, wheel motor and other movable devices remain still with the top cover open.

When the top cover is closed, the 24V DC source is restored, the carriage once moves to the left traverse end and, searching for the home position, returns to the previous position. The wheel rotates and stops at its home position when the top cover is closed.

The keyboard becomes operative after the wheel and carriage assume each home position. (Fig. 13-1)

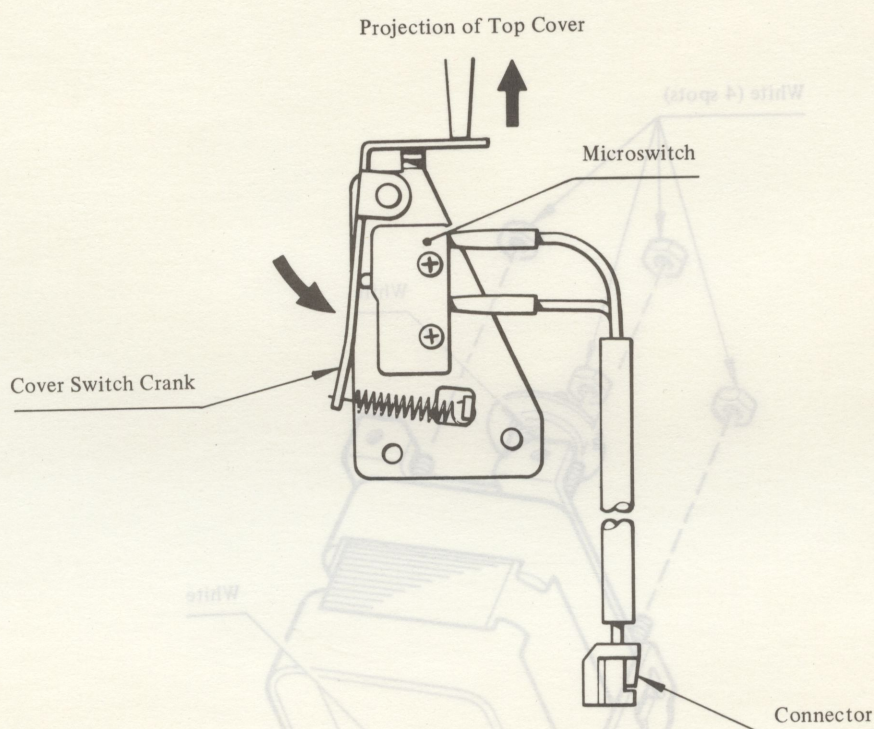


Fig. 13-1

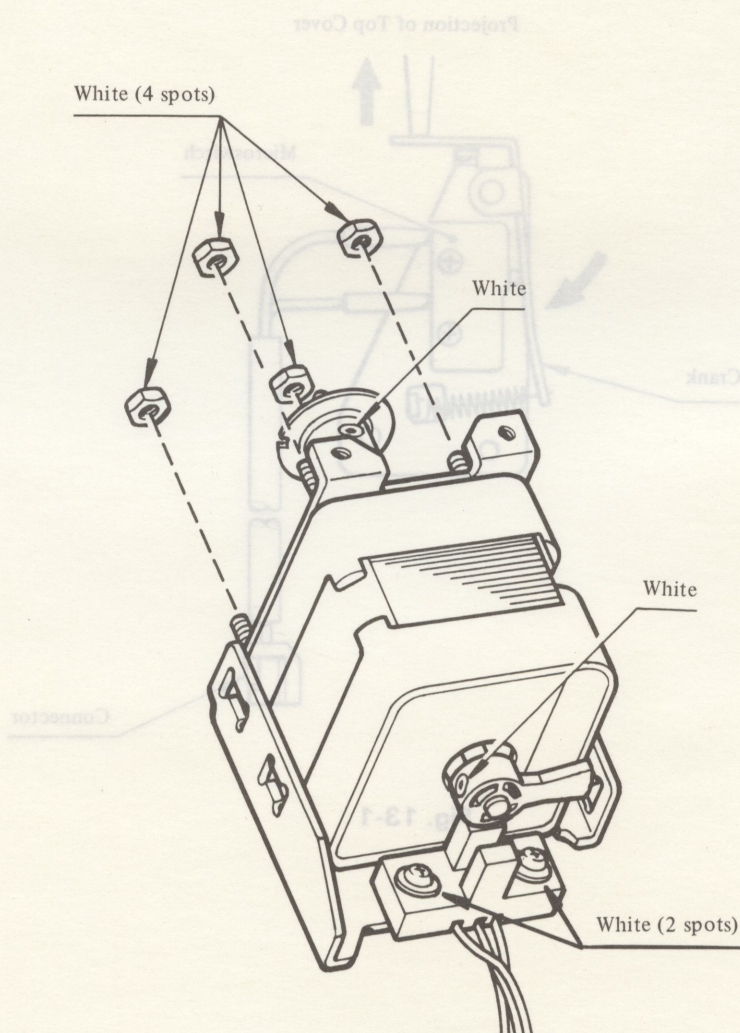
Chapter 3 Application of white lock paint

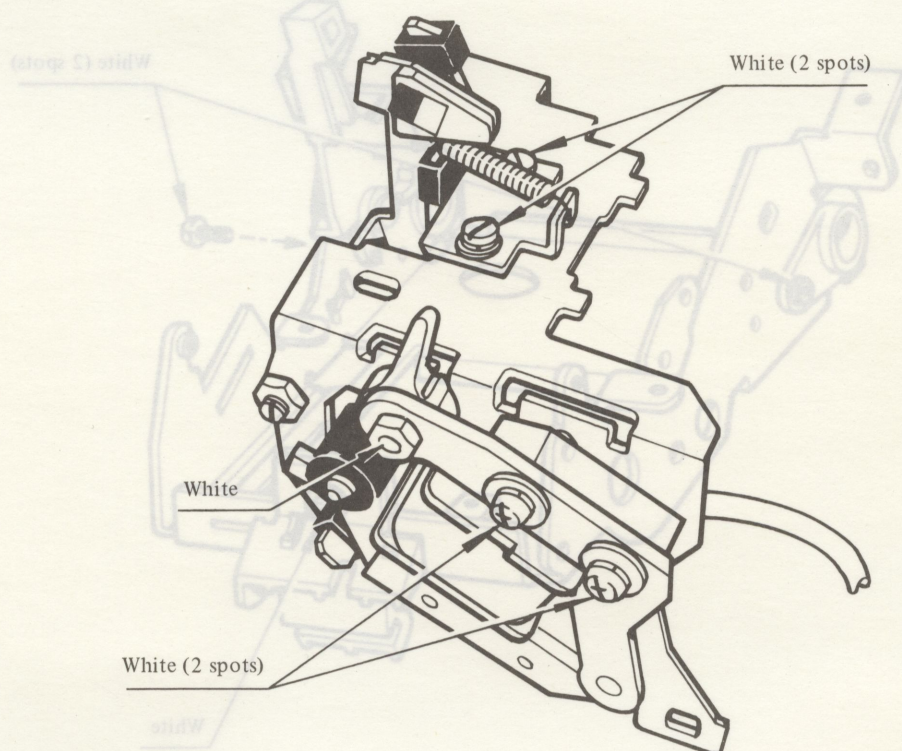
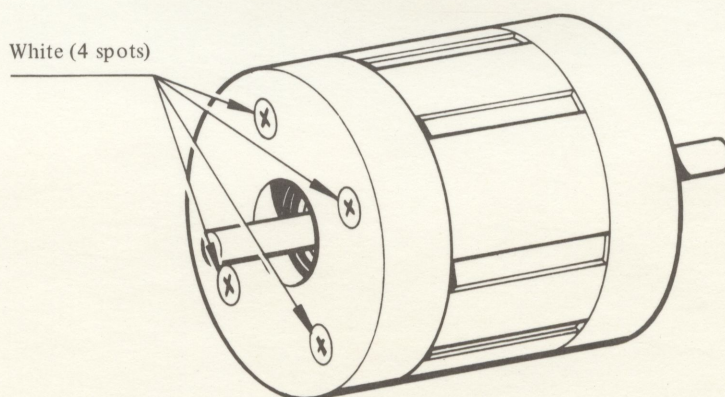
The clamp screws to which lock paint is applied have been tightened after the factory adjustment using special checkers. Do not loosen these screws.

Lock paint is used in the following units or devices.

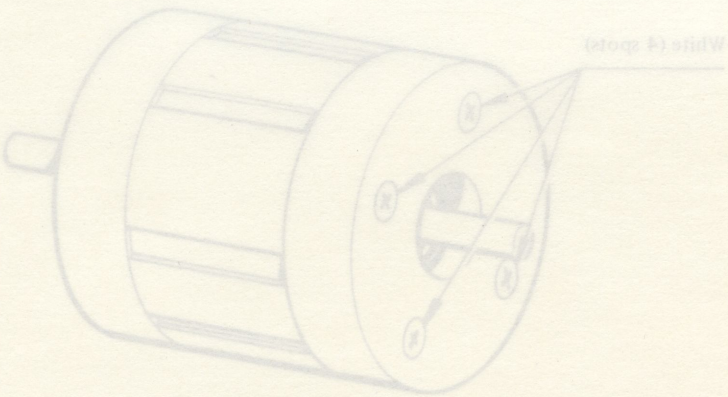
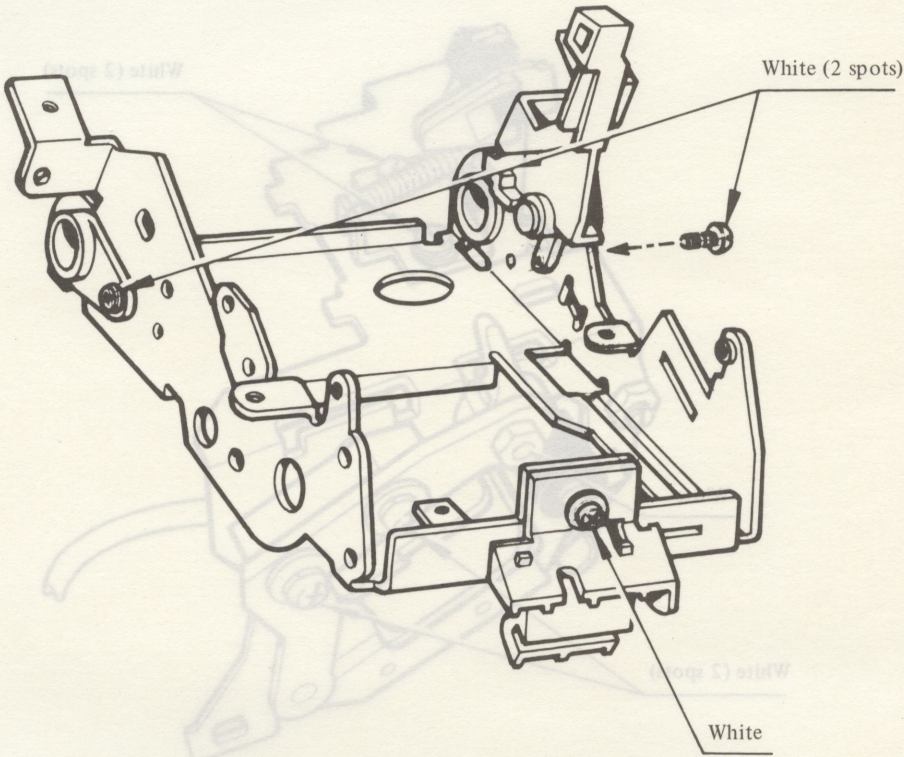
1. Wheel motor unit
2. Print hammer unit
3. Line feed motor
4. Head holder unit

1. Wheel motor unit (8 spots)



2. Print hammer unit (5 spots)**3. Line feed motor (4 spots)**

4. Head holder unit (3 spots)



Chapter 4 MAINTENANCE

1. Upper cover

1-1 Removal

- (1) Remove the paper support.

Draw up the paper support to remove. (Fig. 1-1)

- (2) Remove the platen.

Open the top cover and locate the carriage to the center position. Rise the paper rest and depress the left and right platen holders to remove the platen. (Fig. 1-1)

- (3) Remove the four clamp screws. (Fig. 1-1)

- (4) Remove the upper cover.

Disengage three latches to separate the upper cover from the lower cover and draw up the upper cover to remove. (Fig. 1-1)

1-2 Installation

The upper cover can be installed in the reverse steps of the removing procedure.

1-3 Adjustment and checking

After the upper cover is installed, the following adjustment and checking should be performed.

- (1) Engagement of cover latches

It should be checked that the three latches are securely engaged. (Fig. 1-1)

- (2) Removal and installation of platen

Before removing or installing the platen, the carriage should be located at the center of its traverse.

When the platen is installed, it should be checked that the groove of the left platen bearing is securely set in position on the chassis. (Fig. 1-2)

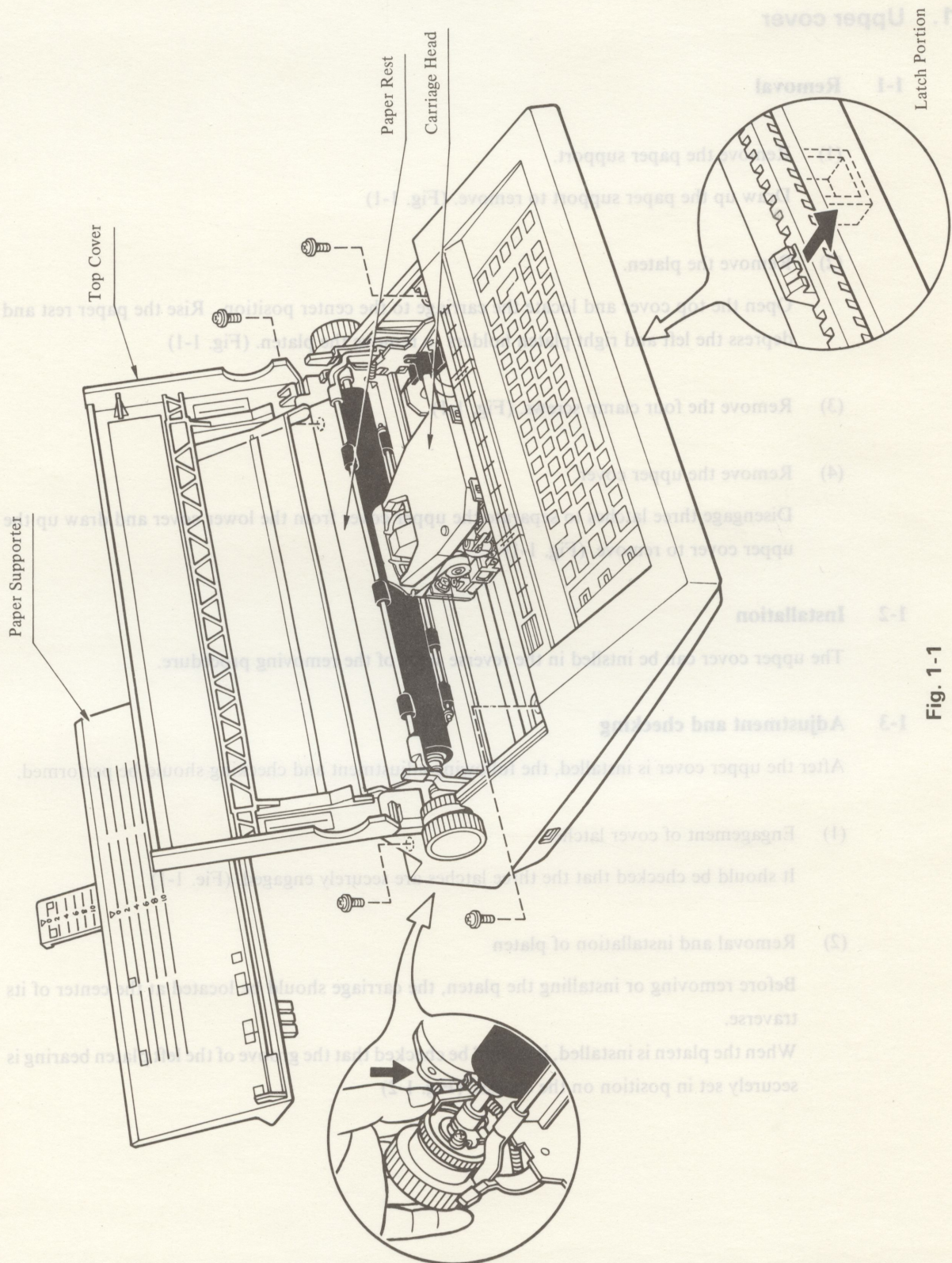


Fig. 1-1

(3) Head indicator

The head indicator LED should be checked that it is exactly in line with the scale of margin scale base.

(For details, refer to the description about the head indicator in Section 19.)

(4) Cover switch

The cover switch should be checked for function.

(For details, refer to the description about the cover switch in Section 11.)

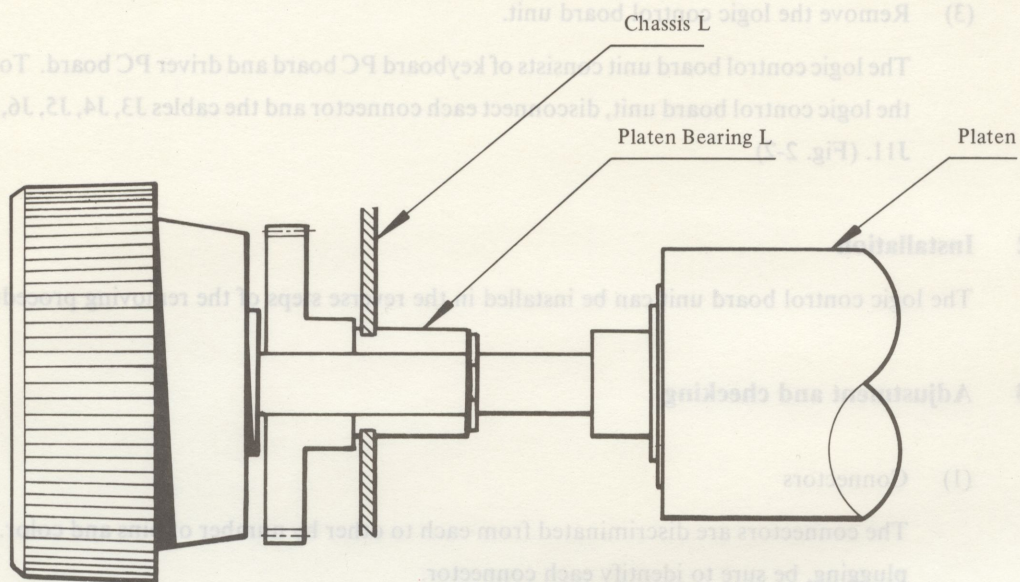


Fig. 1-2

2. Keyboard panel unit and logic control board unit

2-1 Removal

- (1) Remove the upper cover.

- (2) Remove the keyboard panel unit.

To remove the keyboard panel unit, draw it out from the lower cover. The keyboard panel unit can be removed together with the left and right keyboard holders. Pull up the keyboard holders to take out the key top panel unit. (Fig. 2-1)

- (3) Remove the logic control board unit.

The logic control board unit consists of keyboard PC board and driver PC board. To remove the logic control board unit, disconnect each connector and the cables J3, J4, J5, J6, J9, J10, J11. (Fig. 2-2)

2-2 Installation

The logic control board unit can be installed in the reverse steps of the removing procedure.

2-3 Adjustment and checking

- (1) Connectors

The connectors are discriminated from each to other by number of pins and color. Before plugging, be sure to identify each connector.

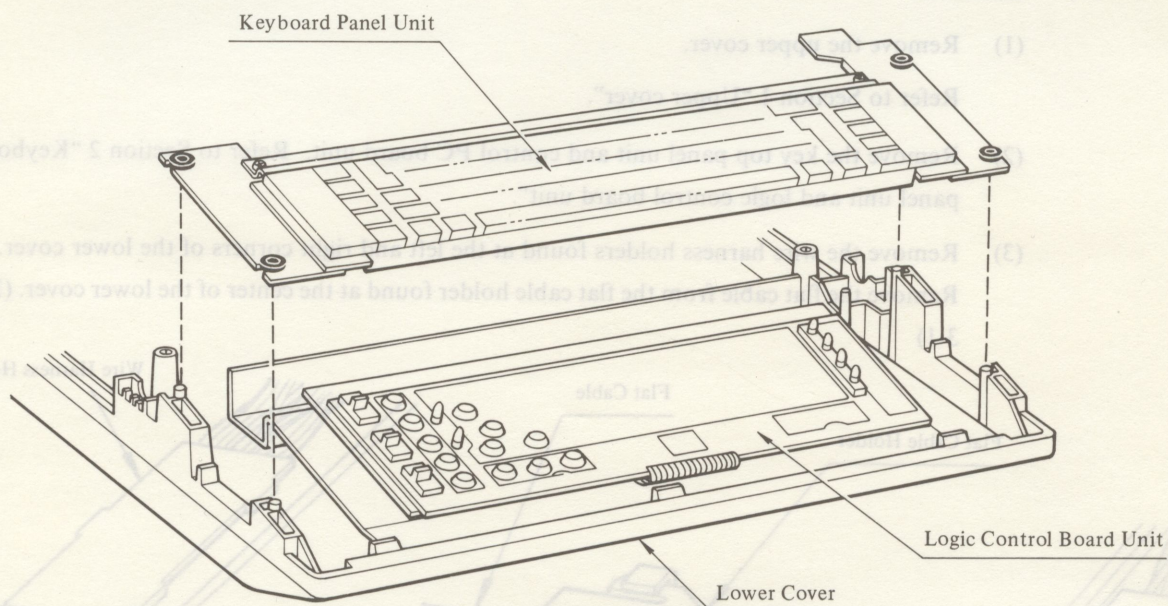


Fig. 2-1

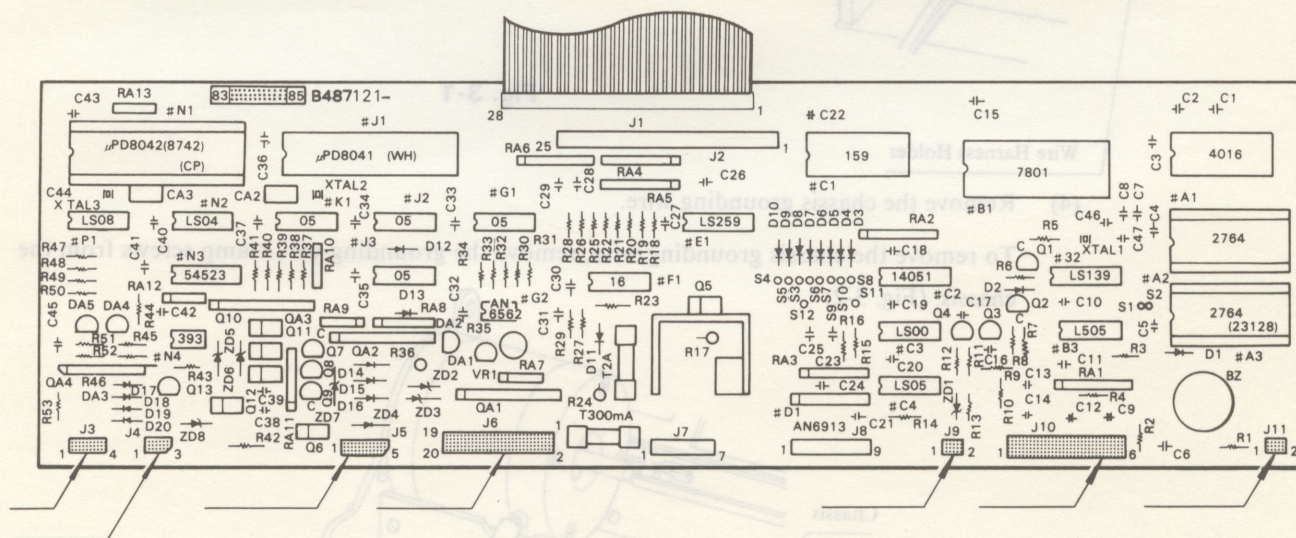


Fig. 2-2

3. Chassis unit

3-1 Removal

- (1) Remove the upper cover.
Refer to Section 1 "Upper cover".
- (2) Remove the key top panel unit and control PC board unit. Refer to Section 2 "Keyboard panel unit and logic control board unit".
- (3) Remove the wire harness holders found at the left and right corners of the lower cover.
Remove the flat cable from the flat cable holder found at the center of the lower cover. (Fig. 3-1)

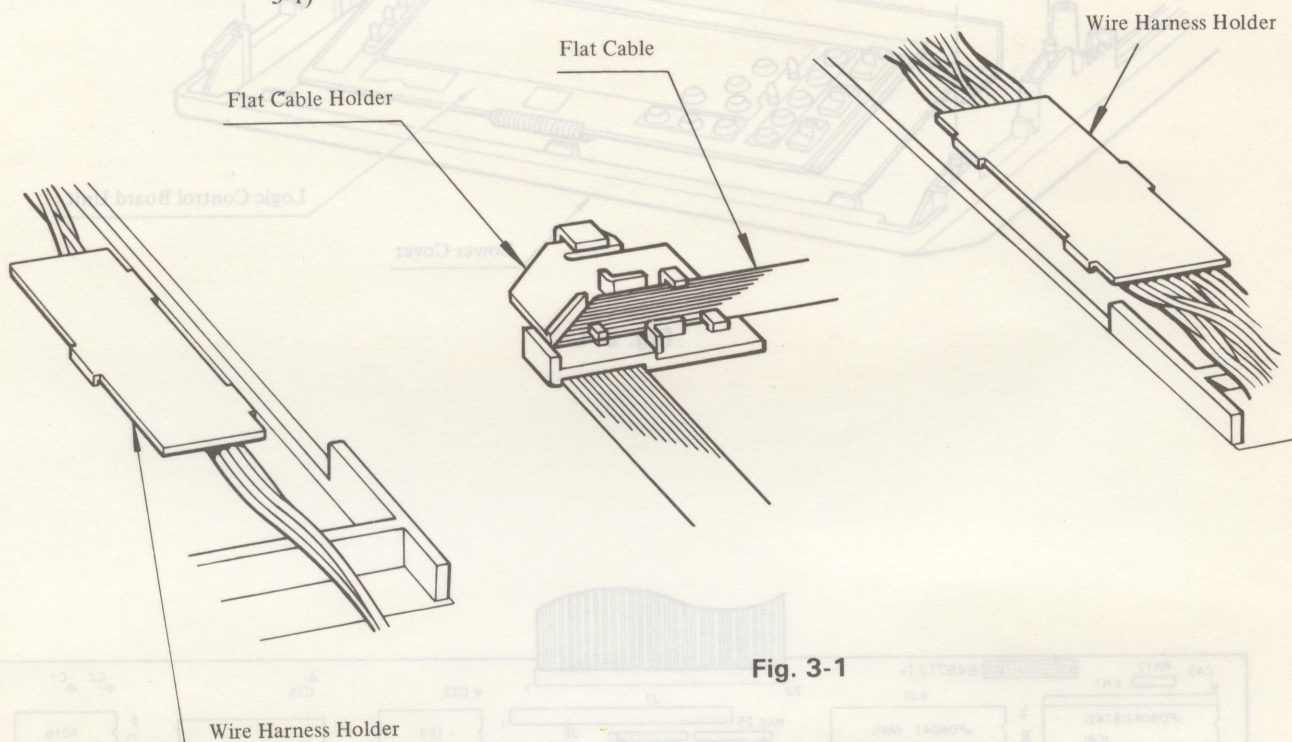


Fig. 3-1

- (4) Remove the chassis grounding wire.

To remove the chassis grounding wire, remove the grounding wire clamp screws from the chassis. (Fig. 3-2)

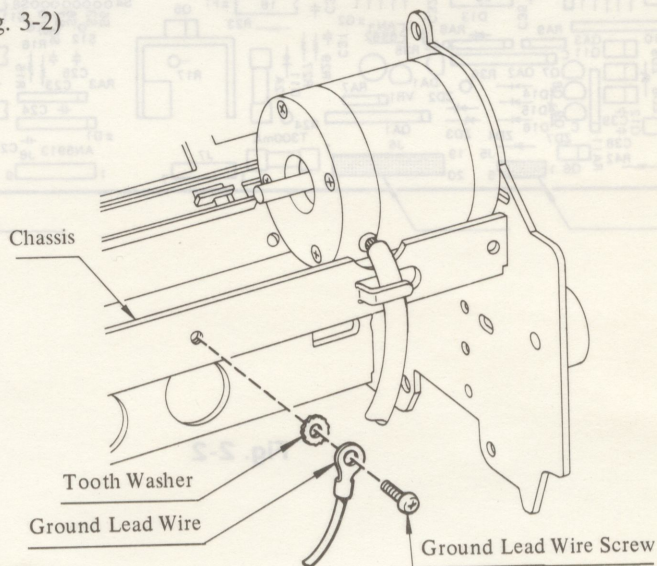


Fig. 3-2

- (5) Remove the chassis unit from the lower cover.

It can be easily and safely removed when held by hands as shown in Fig. 3-3.

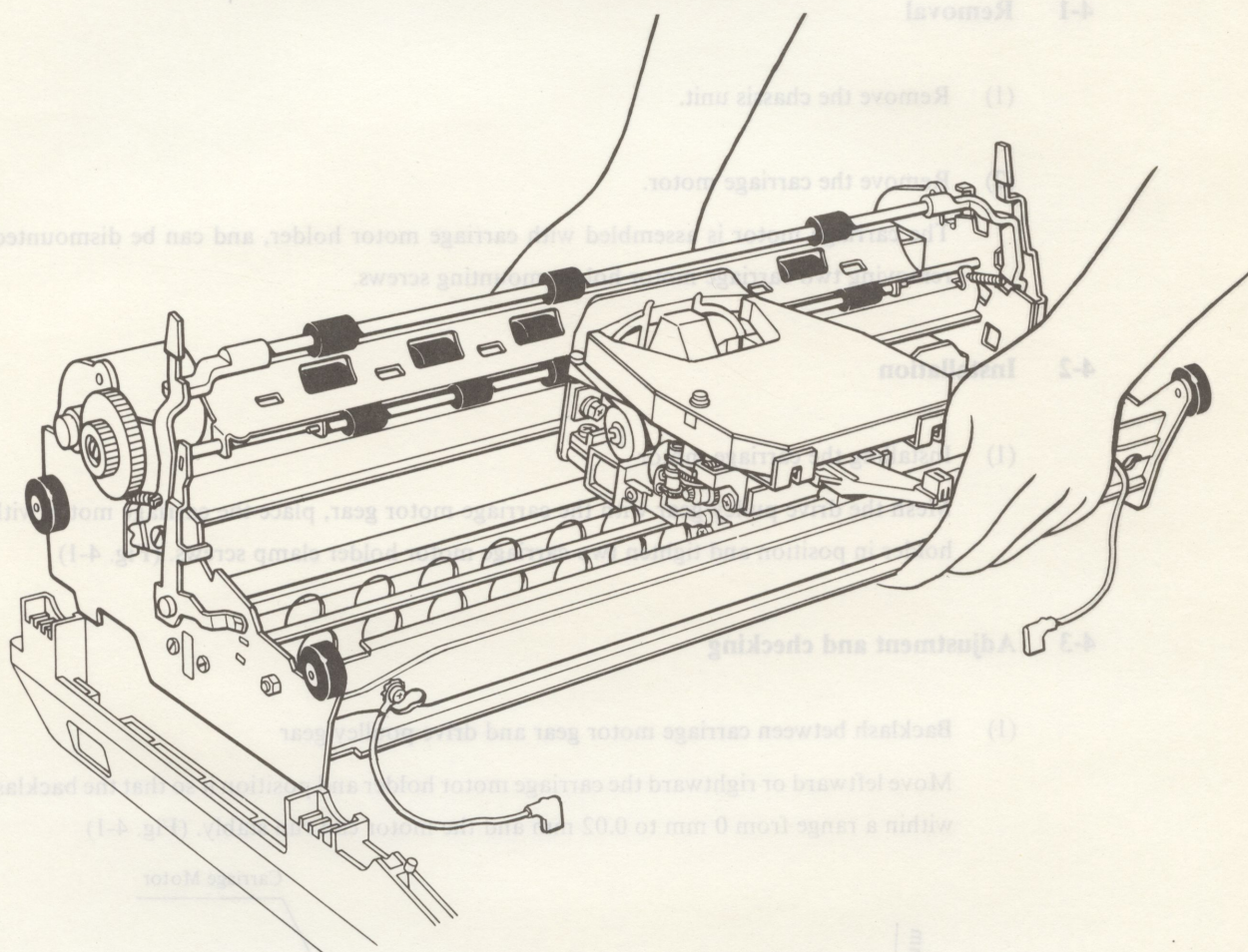


Fig. 3-3

3-2 Installation

The chassis unit can be installed in the reverse steps of the removing procedure.

3-3 Adjustment and checking

- (1) Flat cable position

For flat cable position, refer to Section 14 "Relay circuit board".

4. Carriage motor

4-1 Removal

- (1) Remove the chassis unit.
- (2) Remove the carriage motor.

The carriage motor is assembled with carriage motor holder, and can be dismantled by removing two carriage motor holder mounting screws.

4-2 Installation

- (1) Installing the carriage motor

Mesh the drive pulley gear with the carriage motor gear, place the carriage motor with its holder in position and tighten two carriage motor holder clamp screws. (Fig. 4-1)

4-3 Adjustment and checking

- (1) Backlash between carriage motor gear and drive pulley gear

Move leftward or rightward the carriage motor holder and position it so that the backlash is within a range from 0 mm to 0.02 mm and the motor can run stably. (Fig. 4-1)

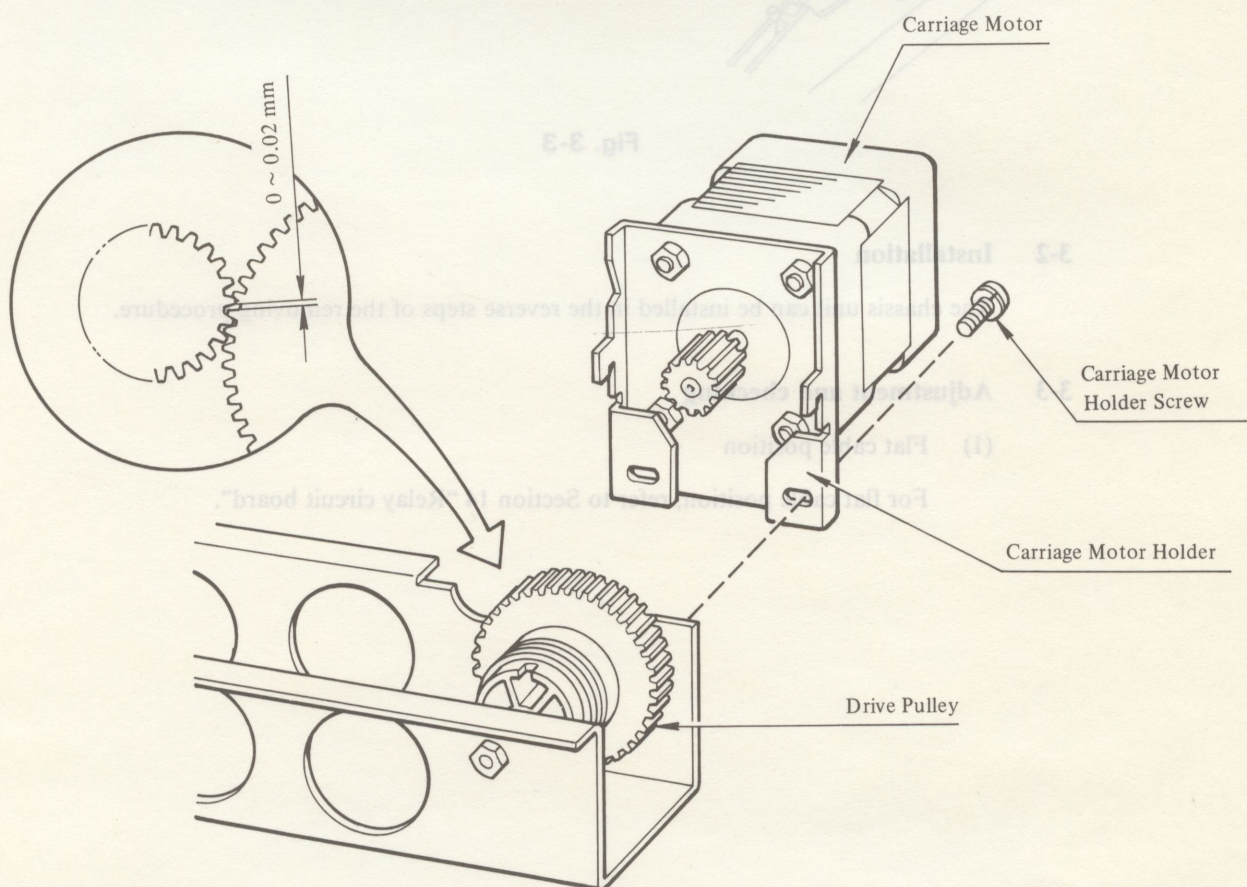


Fig. 4-1

(1) Carriage head home position adjustment

The adjustment should be made with the special checker (CH-60) designed to be used exclusively for this purpose. (Fig. 4-2)

1. Set the following connectors (a ~ c) to the checker.

- (a) Carriage detector connector (P2)

- (b) Carriage motor connector (P3)

Since the receptacle of carriage motor connector (P3) is of 6-pin type, set the connector (plug) so that the rightward 5 pins are engaged.

P3



- (c) Power cord connector (P5)

2. Loosen the wire clamp plate screw and move the carriage leftward until it comes into contact with the left rubber stopper (L).
3. Fully unwind the carriage drive wire (the drive pulley will rotate counter-clockwise) and then turn the drive pulley clockwise by approximately 200° to wind the wire (See Fig. 4-3)

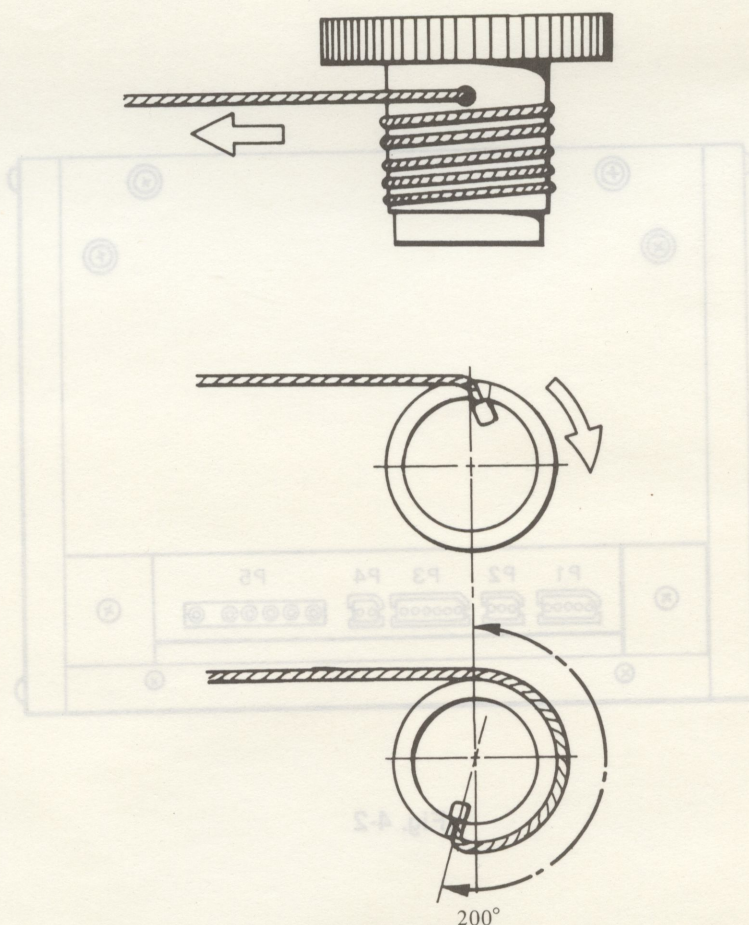
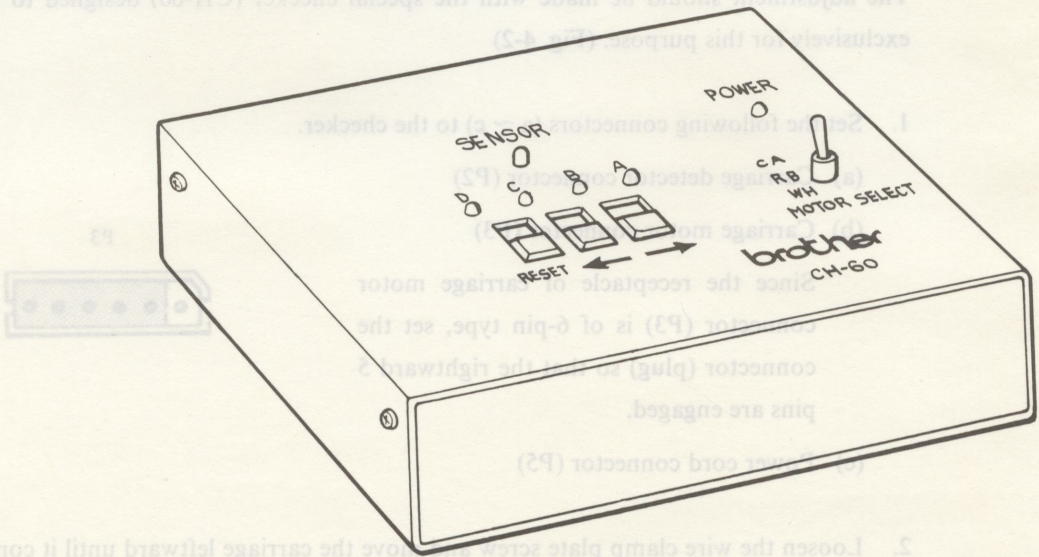


Fig. 4-3

[Switch side]



[Connector side]

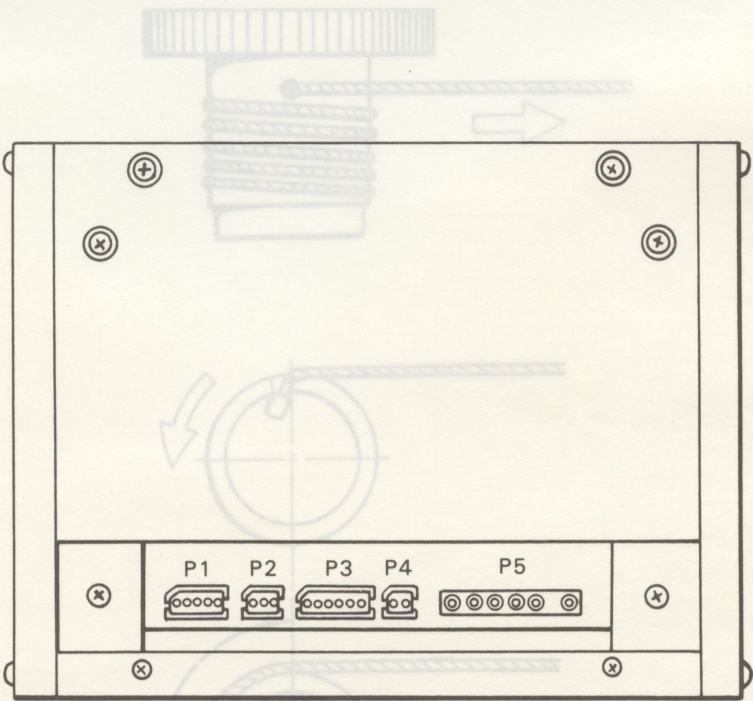


Fig. 4-2

4. Set the MOTOR SELECT switch of checker to "CA" position and turn on the type-writer. The carriage motor will be excited in A-B phases.
5. Depress the key (←) four times to excite the motor in C-D phases. Tighten the wire clamp plate screw to secure the wire to the head holder.
6. Depress the key (→) 12 times to excite the carriage motor in A-B phases again, and the sensor LED will light.

Loosen the carriage detector holder mount screw and move the carriage detector mount plate to adjust so that the sensor LED goes out when the key (→) is depressed twice to change excitation phases from A-B phases to A-D phases.

After the adjustment, repeatedly change excitation phases from A-B phases to A-D phases to make sure the sensor LED lights and goes out correspondingly. (See Fig. 4-4.)

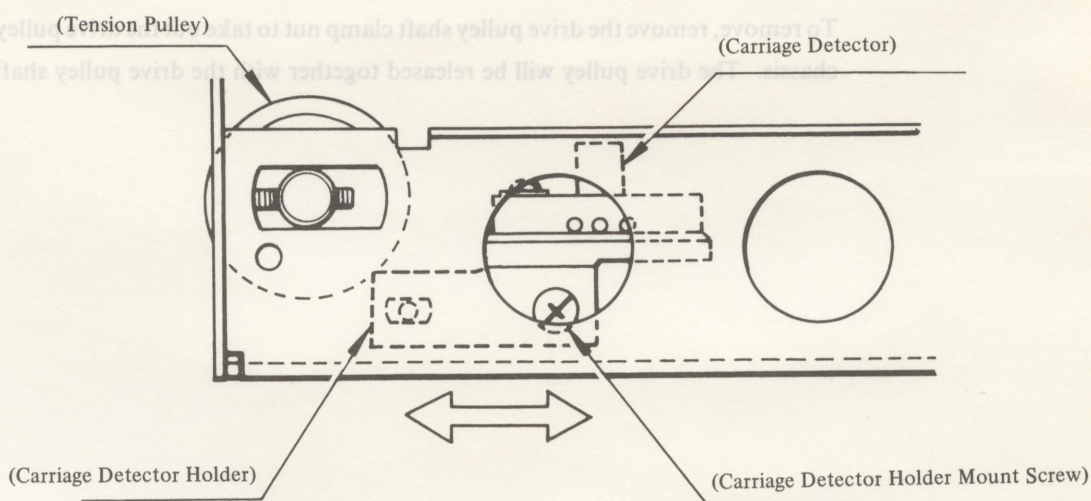


Fig. 4-4

5. Carriage drive wire and pulley

5-1 Removal

(1) Remove the chassis unit.

(2) Remove the carriage motor.

(3) Remove the tension pulley.

To remove, loosen the Rope holder plate screw, remove the drive wire and then the tension pulley shaft screw and take out the tension pulley from the chassis. (See Fig. 5-1.)

(4) Remove the drive wire from the drive pulley.

(5) Remove the drive pulley.

To remove, remove the drive pulley shaft clamp nut to take out the drive pulley shaft from the chassis. The drive pulley will be released together with the drive pulley shaft collar.

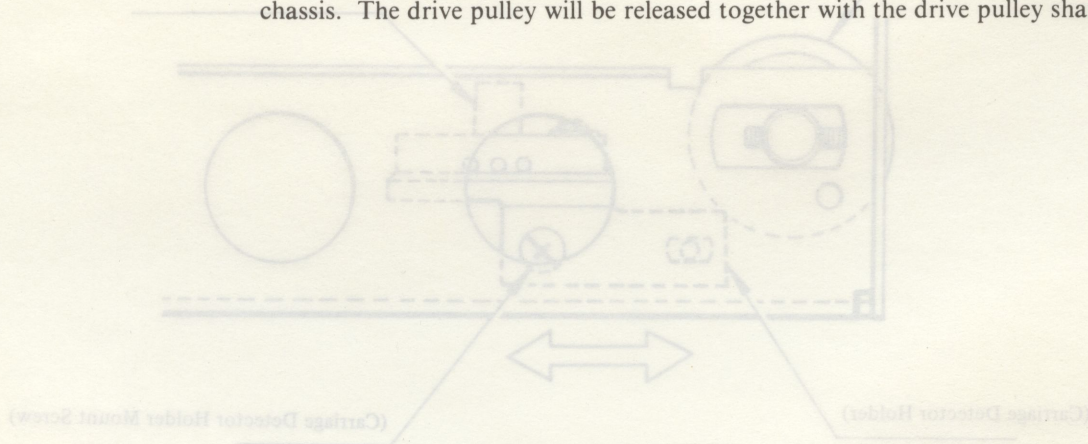


Fig. 4-4

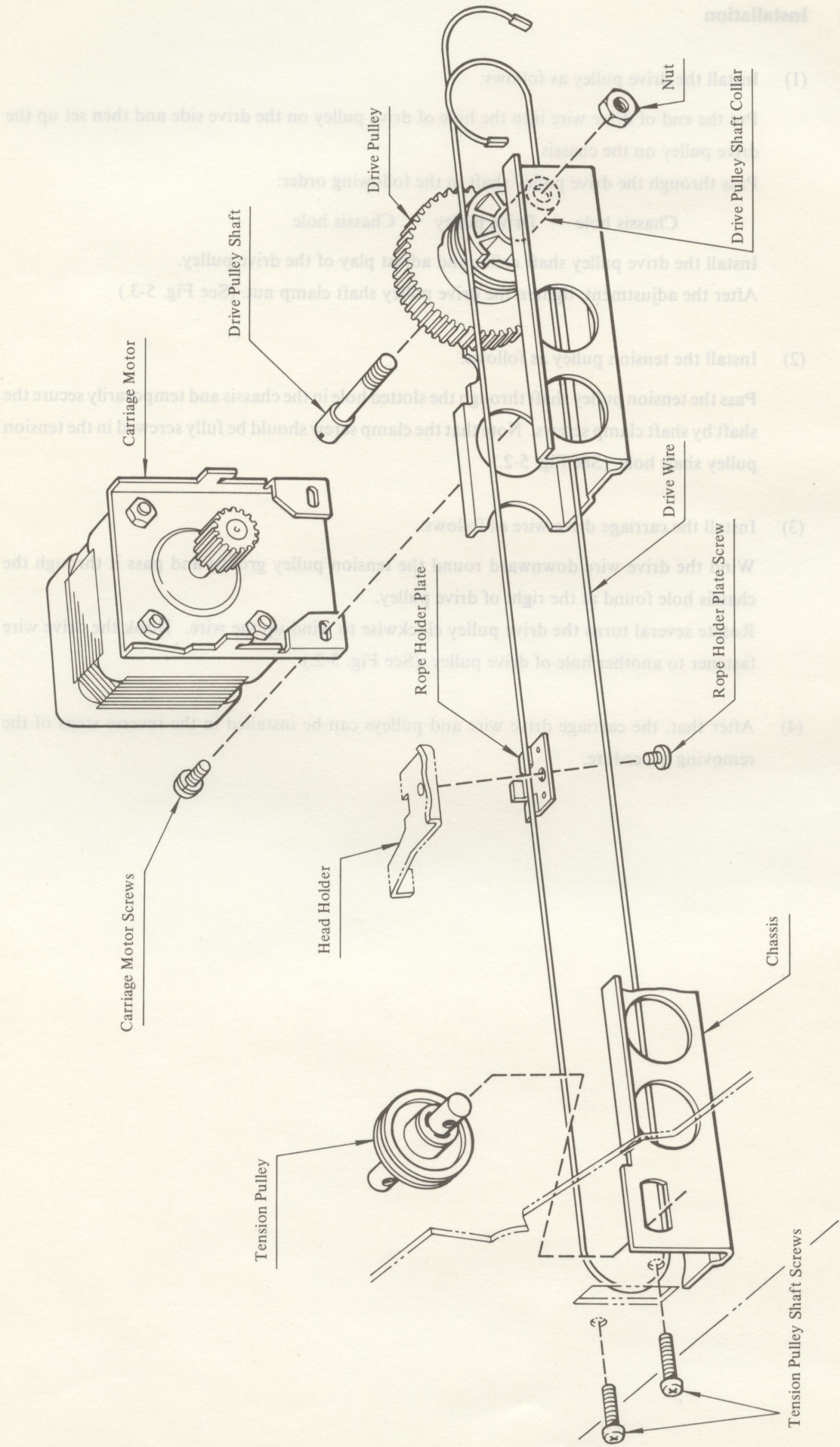


Fig. 5-1

5-2 Installation

- (1) Install the drive pulley as follows:

Put the end of drive wire into the hole of drive pulley on the drive side and then set up the drive pulley on the chassis.

Pass through the drive pulley shaft in the following order:

Chassis hole → Drive pulley → Chassis hole

Install the drive pulley shaft collar and adjust play of the drive pulley.

After the adjustment, tighten the drive pulley shaft clamp nut. (See Fig. 5-3.)

- (2) Install the tension pulley as follows:

Pass the tension pulley shaft through the slotted hole in the chassis and temporarily secure the shaft by shaft clamp screws. Note that the clamp screw should be fully screwed in the tension pulley shaft hole. (See Fig. 5-2.)

- (3) Install the carriage drive wire as follows:

Wind the drive wire downward round the tension pulley groove and pass it through the chassis hole found at the right of drive pulley.

Rotate several turns the drive pulley clockwise to wind up the wire. Hook the drive wire fastener to another hole of drive pulley. (See Fig. 5-2.)

- (4) After that, the carriage drive wire and pulleys can be installed in the reverse steps of the removing procedure.

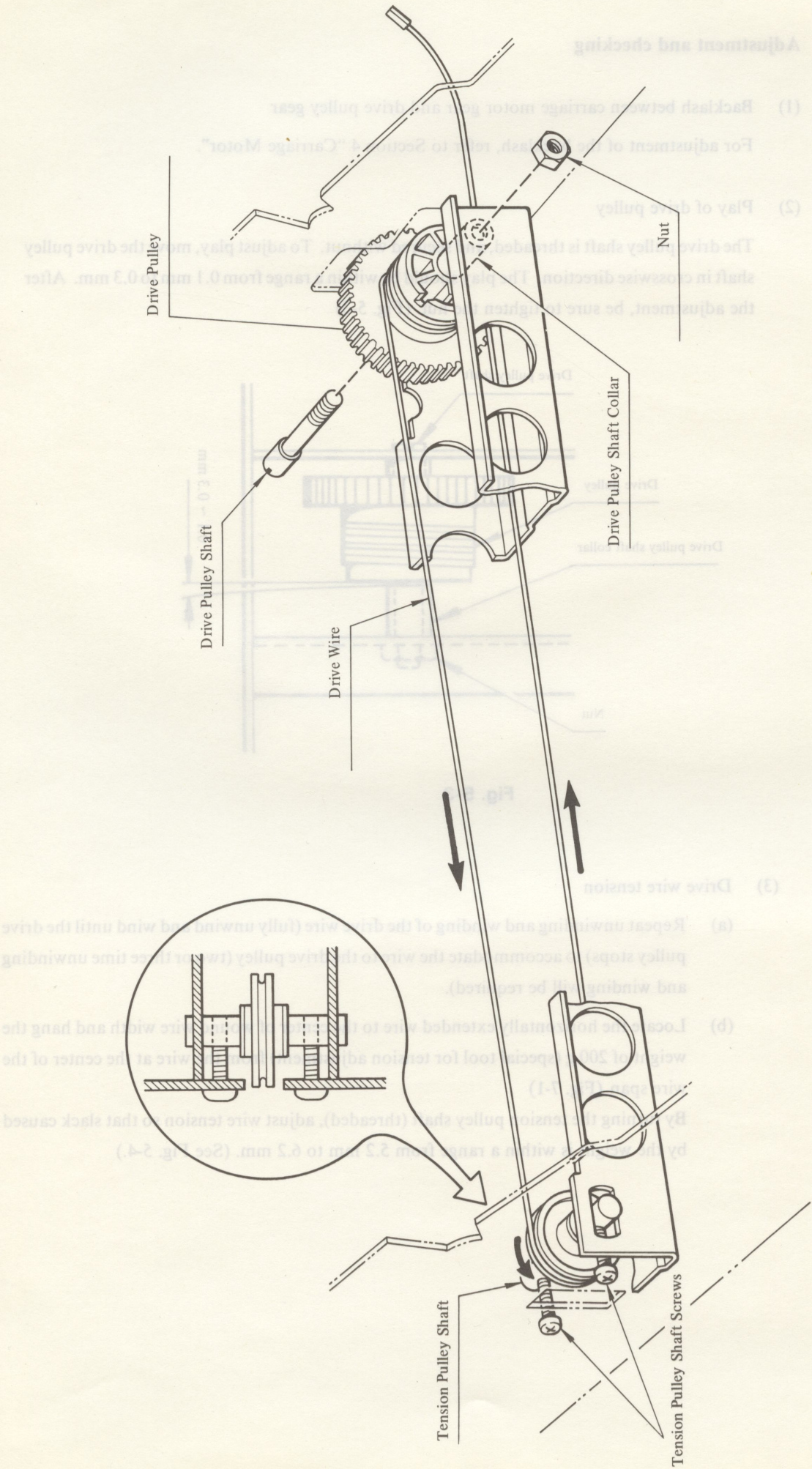


Fig. 5-2

5-3 Adjustment and checking

- (1) Backlash between carriage motor gear and drive pulley gear

For adjustment of the backlash, refer to Section 4 "Carriage Motor".

- (2) Play of drive pulley

The drive pulley shaft is threaded, and secured with nut. To adjust play, move the drive pulley shaft in crosswise direction. The play should be within a range from 0.1 mm to 0.3 mm. After the adjustment, be sure to tighten the nut. (Fig. 5-3)

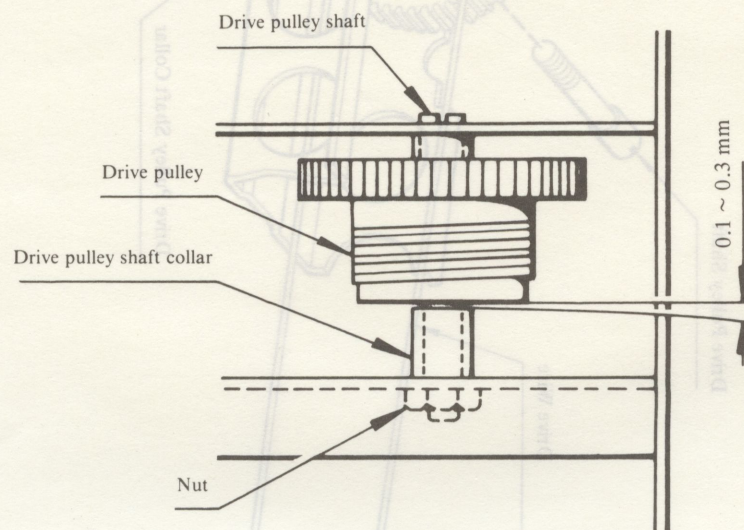


Fig. 5-3

- (3) Drive wire tension

- (a) Repeat unwinding and winding of the drive wire (fully unwind and wind until the drive pulley stops) to accommodate the wire to the drive pulley (two or three time unwinding and winding will be required).
- (b) Locate the horizontally extended wire to the center of wound wire width and hang the weight of 200 g (special tool for tension adjustment) from the wire at the center of the wire span. (Fig. 7-1)

By turning the tension pulley shaft (threaded), adjust wire tension so that slack caused by the weight is within a range from 5.2 mm to 6.2 mm. (See Fig. 5-4.)

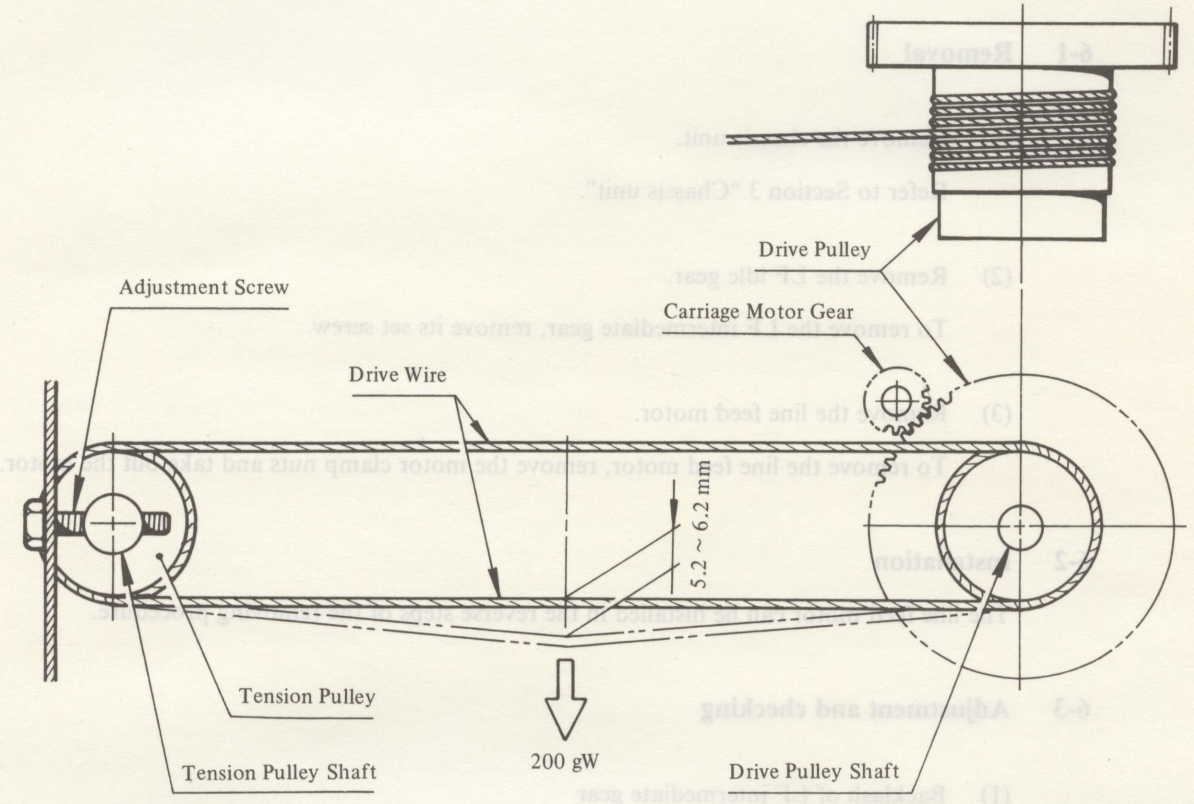


Fig. 5-4

(4) Carriage head home position

for adjustment of carriage head home position, refer to Section 4 “Carriage motor”.

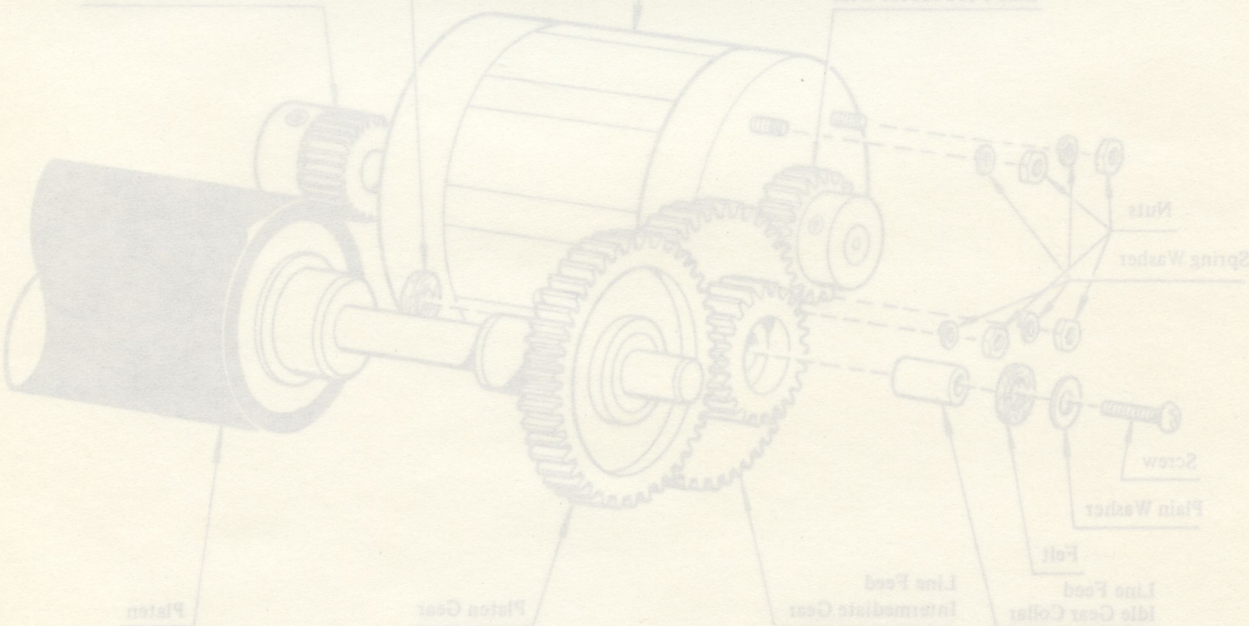


Fig. 6-1

6. Line feed motor

6-1 Removal

- (1) Remove the chassis unit.

Refer to Section 3 "Chassis unit".

- (2) Remove the LF idle gear.

To remove the LF intermediate gear, remove its set screw.

- (3) Remove the line feed motor.

To remove the line feed motor, remove the motor clamp nuts and take out the motor.

6-2 Installation

The line feed motor can be installed in the reverse steps of the removing procedure.

6-3 Adjustment and checking

- (1) Backlash of LF intermediate gear

Install the platen and adjust the meshing between the LF intermediate gear and the LF motor gear, and the platen gear so that no backlash occurs and the platen can rotate smoothly when paper is released. (Fig. 6-1)

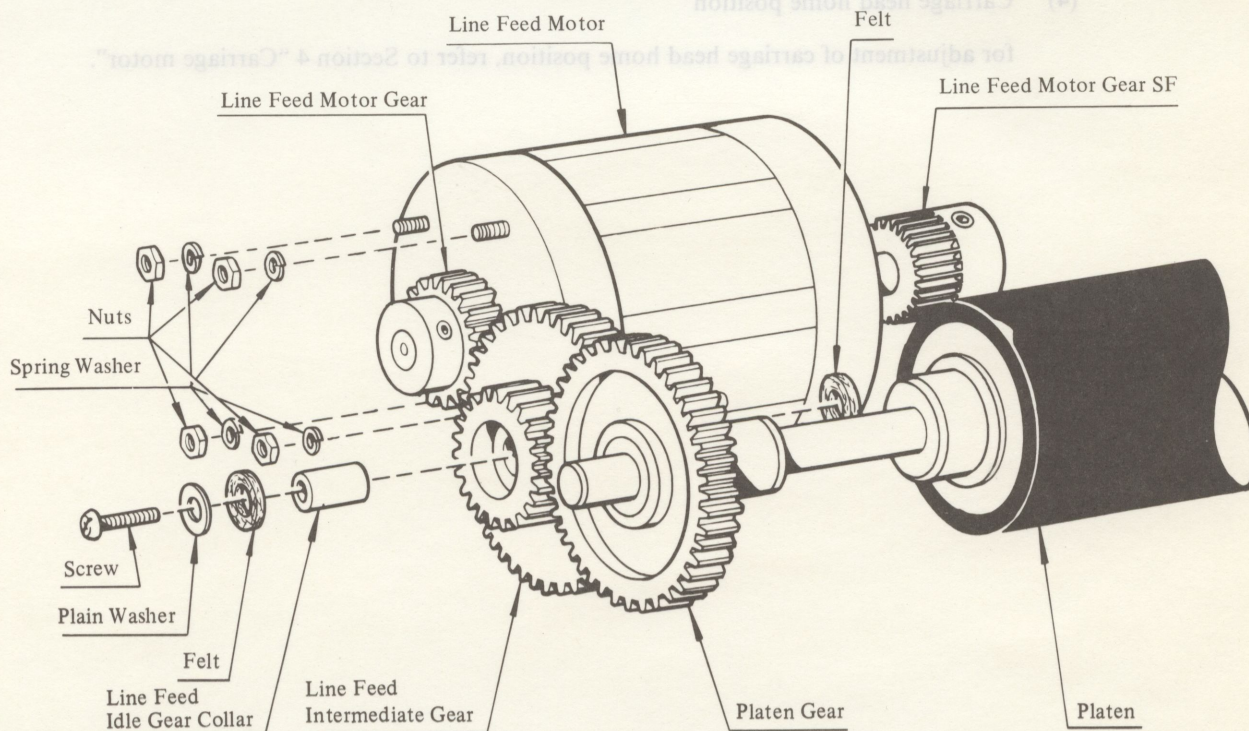


Fig. 6-1

7. Platen

The platen is detachable. (For removal of the platen, refer to Section 1 "Upper cover".)

In this section, description is given in respect to the assembling and disassembling procedures.

7-1 Disassembling

- (1) Removing the platen knobs and platen rotation knobs (sleeve)

The platen has each one combination of platen knob and platen rotation knob at both (left and right) ends of platen.

The platen knob can be removed together with the platen rotation knob from the platen shaft by taking out the spring pin secured to the platen rotation knob.

The platen knob can be separated from the platen rotation knob by bending the claws of platen rotation knob. (Fig. 7-1)

- (2) Removing the platen gear

Loosen the platen gear set screw and draw outward the platen gear to remove it from the platen shaft.

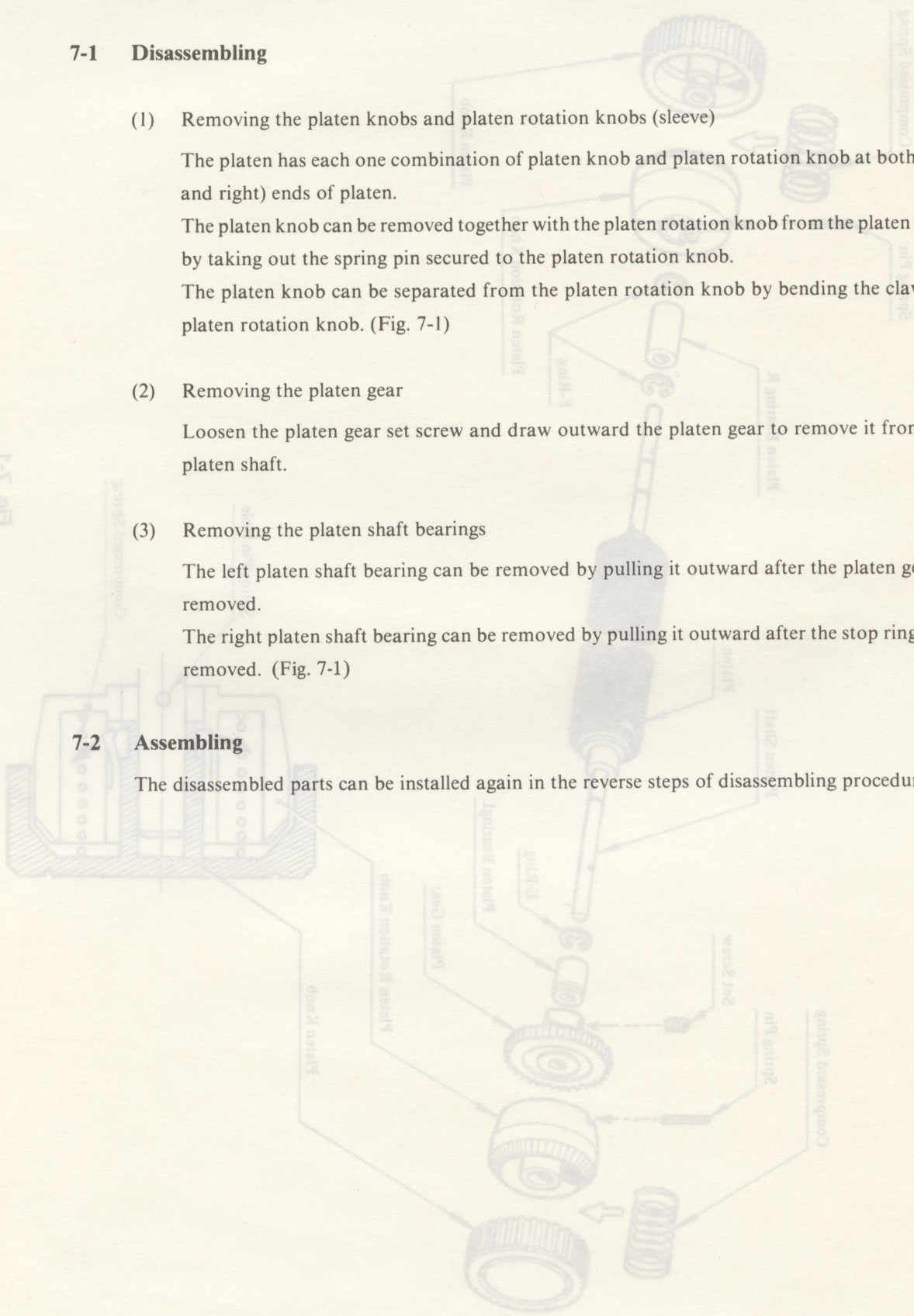
- (3) Removing the platen shaft bearings

The left platen shaft bearing can be removed by pulling it outward after the platen gear is removed.

The right platen shaft bearing can be removed by pulling it outward after the stop rings are removed. (Fig. 7-1)

7-2 Assembling

The disassembled parts can be installed again in the reverse steps of disassembling procedure.



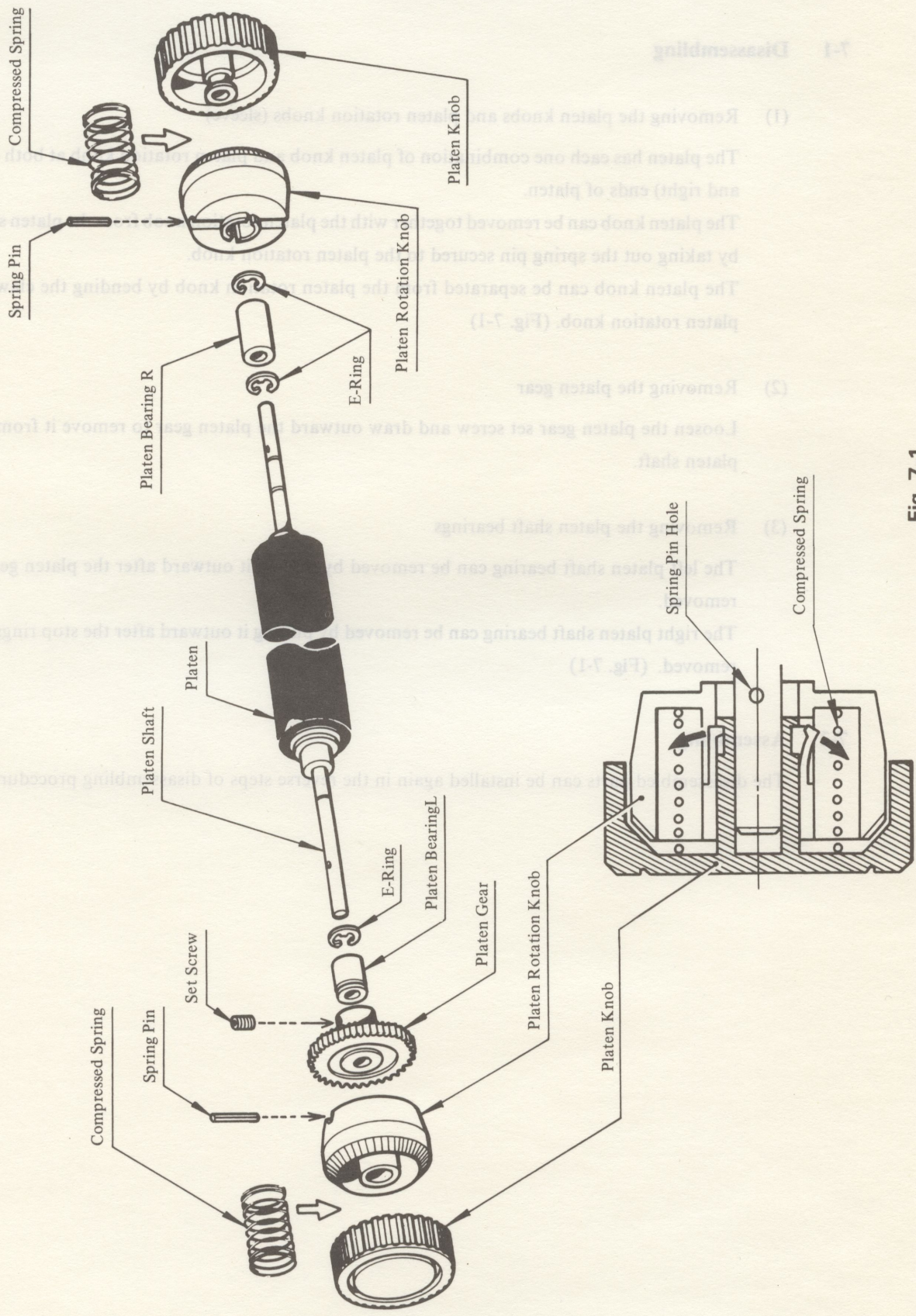


Fig. 7-1

7-3 Adjustment and checking

(1) Platen knob movement

It should be checked that the platen knob is securely engaged with the platen rotation knob when the former is depressed, and disengaged by repulsion of the compression spring when released from the depression.

Checking is also necessary for the platen knobs to make sure that the disengaged platen knobs can be smoothly and lightly rotated by hand without causing unusual sound.

(2) Platen shaft left bearing

The platen shaft left bearing should be adjusted through the platen gear set screw so that it can smoothly rotate with an axial play within a range from 0.01 mm to 0.04 mm. (Fig. 7-2)

(3) Driving the spring pins into and out the platen shaft

When driving the spring pin into and out the platen shaft, securely hold the platen.

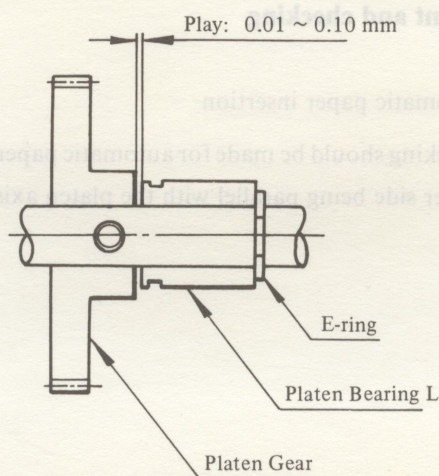


Fig. 7-2

8. Paper bail solenoid

8-1 Removal

- (1) Remove the chassis unit.

Refer to Section 3 "Chassis unit".)

- (2) Remove the paper bail drive shaft.

To remove the paper bail drive shaft, remove the stop rings.

- (3) Remove the paper bail solenoid.

To remove the paper bail solenoid, remove two paper bail solenoid mounting screws, release the leads from the lead clamp and take out the solenoid. (Fig. 8-1)

8-2 Installation

The paper bail solenoid can be installed again in the reverse steps of the removing procedure.

8-3 Adjustment and checking

- (1) Automatic paper insertion

Checking should be made for automatic paper insertion by slipping and "A3" size paper (with longer side being parallel with the platen axis) into the typewriter. (Fig. 8-2)

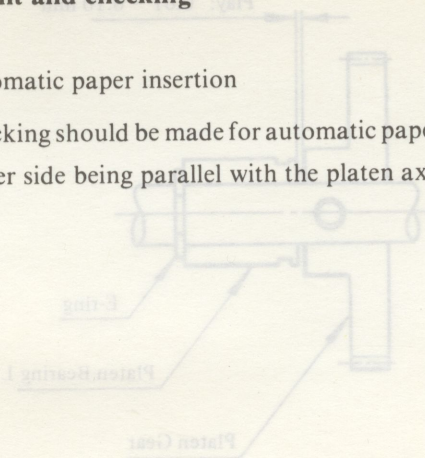


Fig. 8-2

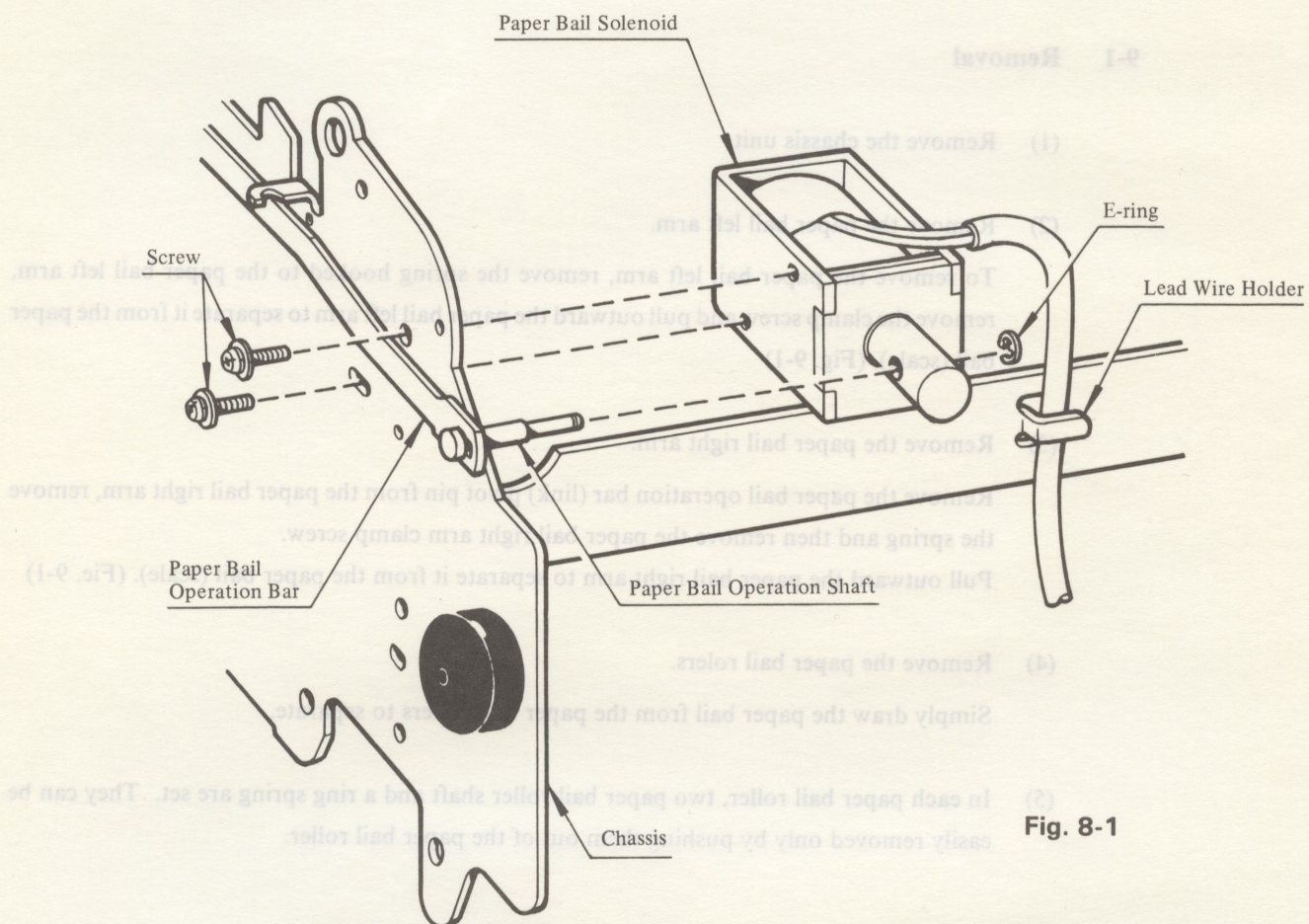


Fig. 8-1

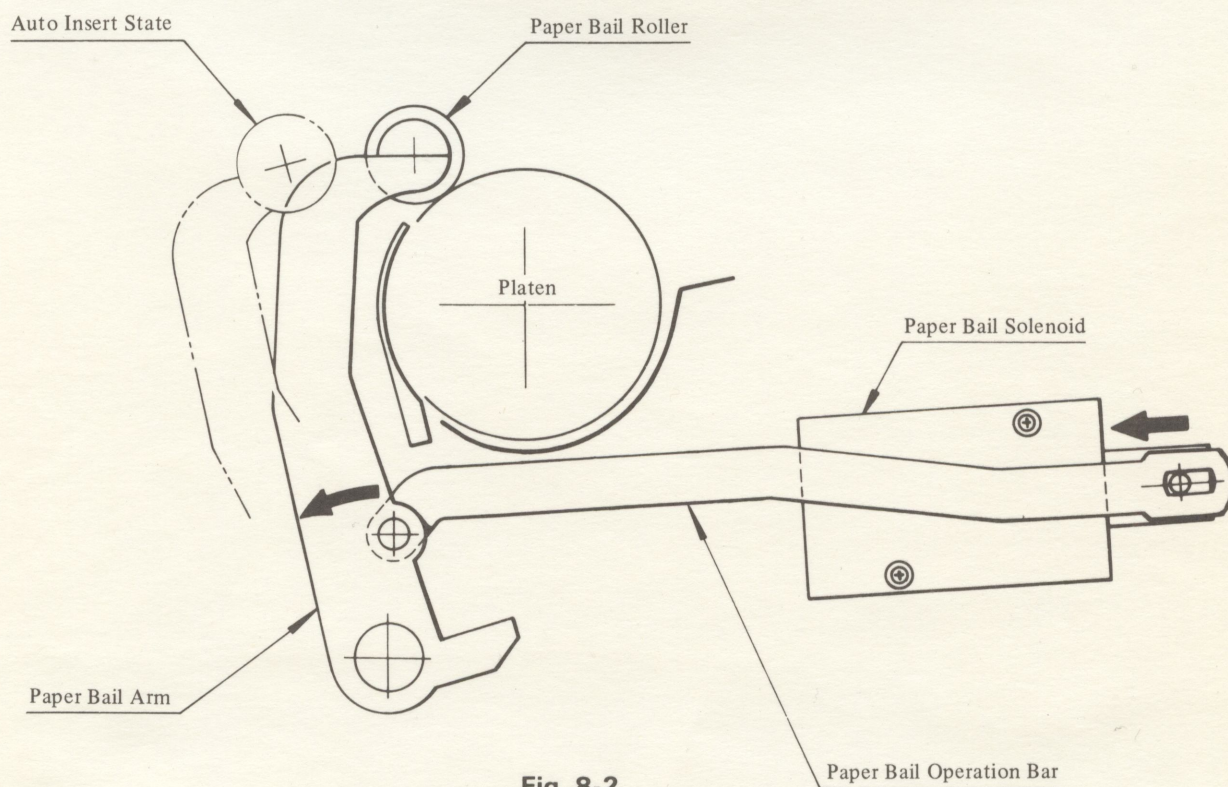


Fig. 8-2

9. Paper bail

9-1 Removal

- (1) Remove the chassis unit.

- (2) Remove the paper bail left arm.

To remove the paper bail left arm, remove the spring hooked to the paper bail left arm, remove the clamp screw and pull outward the paper bail left arm to separate it from the paper bail (scale). (Fig. 9-1)

- (3) Remove the paper bail right arm.

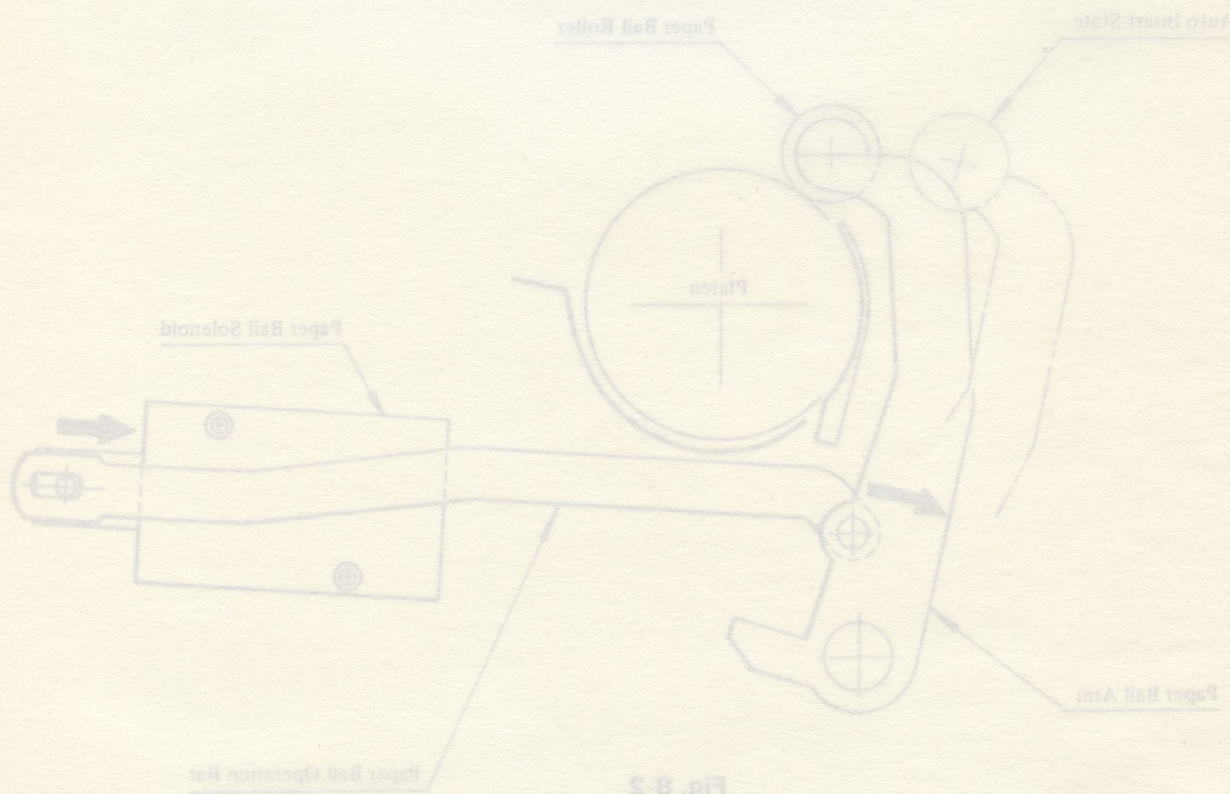
Remove the paper bail operation bar (link) pivot pin from the paper bail right arm, remove the spring and then remove the paper bail right arm clamp screw.

Pull outward the paper bail right arm to separate it from the paper bail (scale). (Fig. 9-1)

- (4) Remove the paper bail rollers.

Simply draw the paper bail from the paper bail rollers to separate.

- (5) In each paper bail roller, two paper bail roller shaft and a ring spring are set. They can be easily removed only by pushing them out of the paper bail roller.



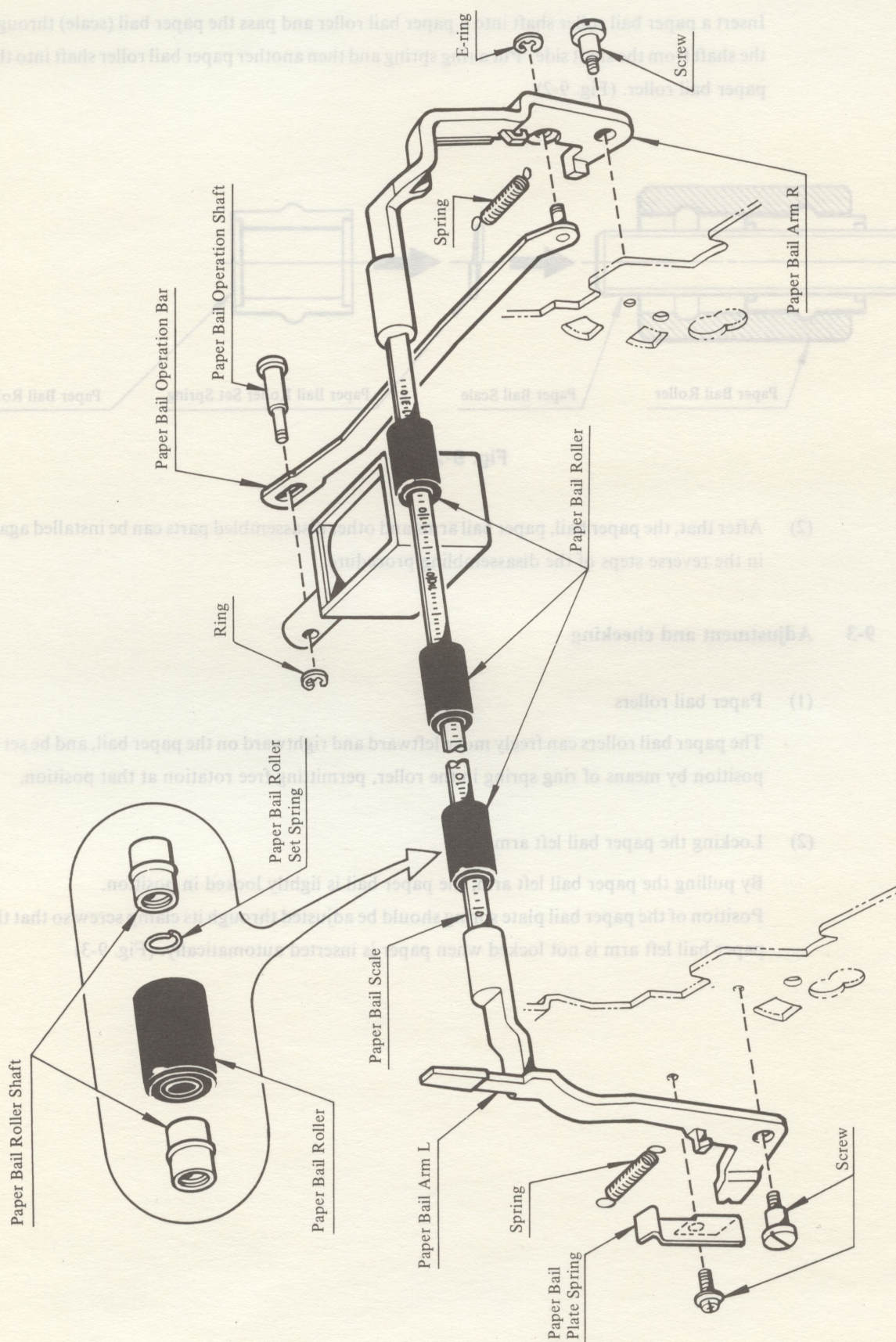


Fig. 9-1

9-2 Installation

(1) Paper bail rollers

Insert a paper bail roller shaft into a paper bail roller and pass the paper bail (scale) through the shaft from the shaft side. Put a ring spring and then another paper bail roller shaft into the paper bail roller. (Fig. 9-2)

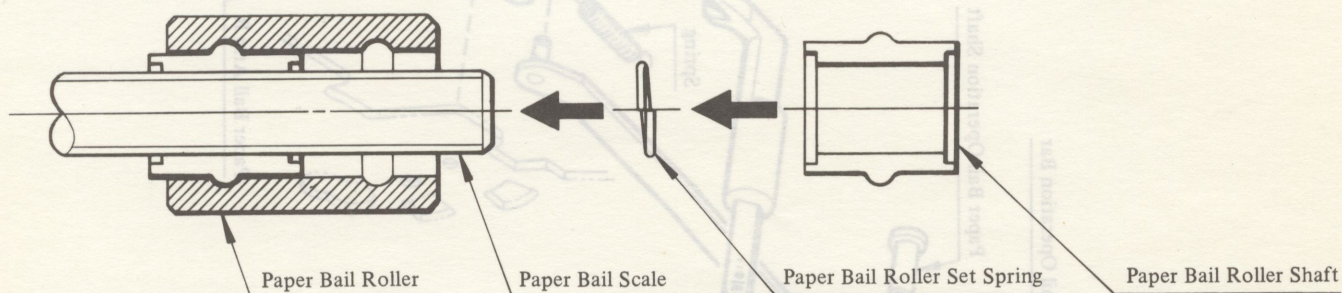


Fig. 9-2

- (2) After that, the paper bail, paper bail arms and other disassembled parts can be installed again in the reverse steps of the disassembling procedure.

9-3 Adjustment and checking

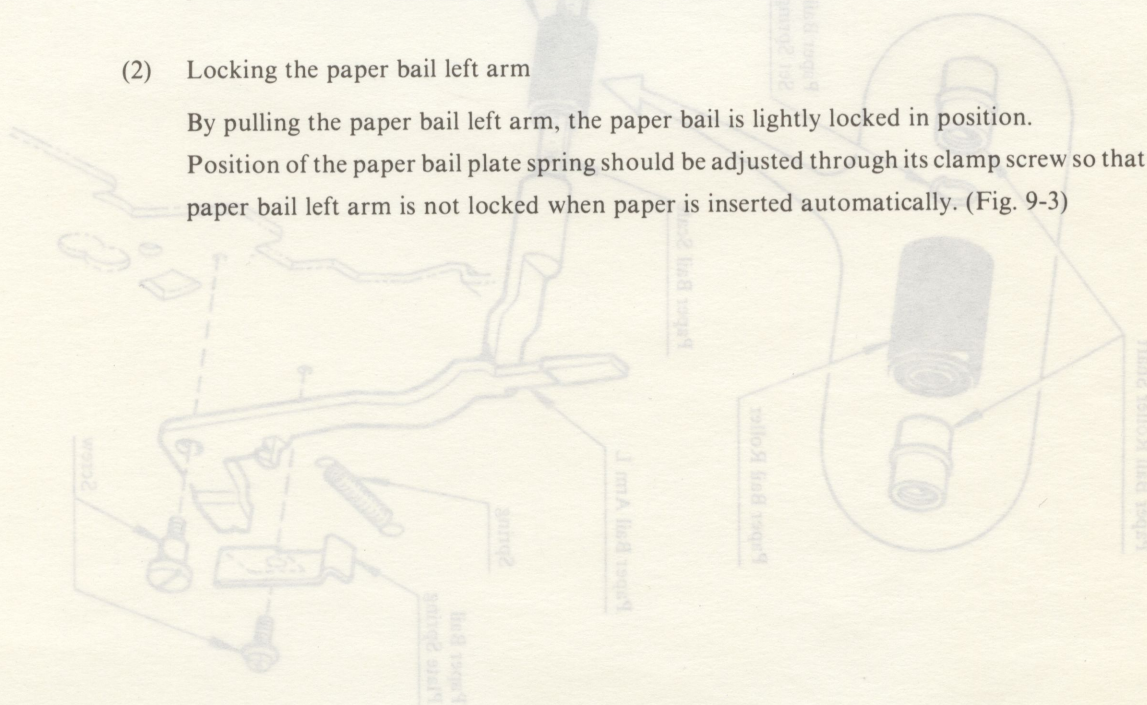
(1) Paper bail rollers

The paper bail rollers can freely move leftward and rightward on the paper bail, and be set in position by means of ring spring in the roller, permitting free rotation at that position.

(2) Locking the paper bail left arm

By pulling the paper bail left arm, the paper bail is lightly locked in position.

Position of the paper bail plate spring should be adjusted through its clamp screw so that the paper bail left arm is not locked when paper is inserted automatically. (Fig. 9-3)



10. Paper feed rollers and paper stopper

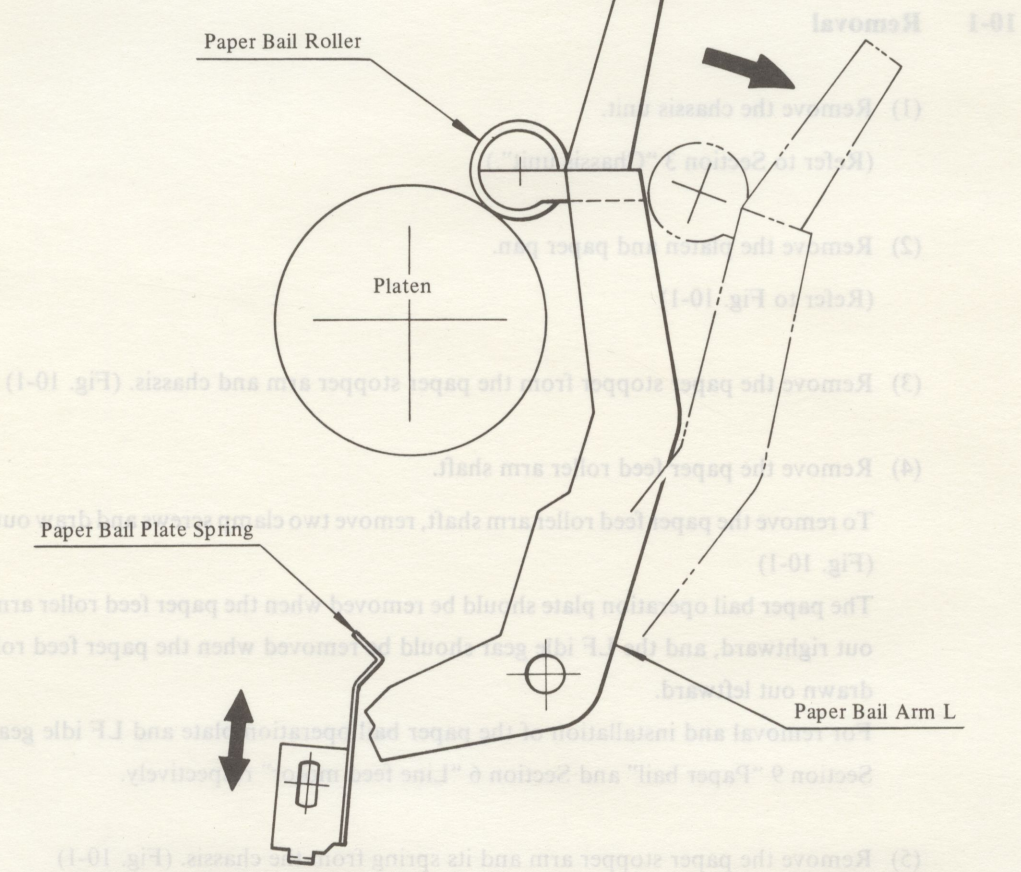


Fig. 9-3

To remove the paper feed rollers, remove the paper feed roller arms (front and rear) and their springs from the chassis. Then remove the front and rear paper feed rollers from the chassis and take out the cam shaft. (Fig. 10-1)

(8) Remove the paper release lever.

To remove the paper release lever, remove its clamp screw. (Fig. 10-1)

(7) Remove the cam shaft.

To remove the cam shaft, remove the cam shaft stop ring (E-ring) on the left side of chassis, and the paper release lever stop ring (E-ring) on the right side of chassis, remove the spring from the chassis and take out the cam shaft. (Fig. 10-1)

(6) Remove the paper feed rollers.

10. Paper feed rollers and paper stopper

10-1 Removal

- (1) Remove the chassis unit.

(Refer to Section 3 "Chassis unit".)

- (2) Remove the platen and paper pan.

(Refer to Fig. 10-1)

- (3) Remove the paper stopper from the paper stopper arm and chassis. (Fig. 10-1)

- (4) Remove the paper feed roller arm shaft.

To remove the paper feed roller arm shaft, remove two clamp screws and draw out the shaft. (Fig. 10-1)

The paper bail operation plate should be removed when the paper feed roller arm is drawn out rightward, and the LF idle gear should be removed when the paper feed roller arm is drawn out leftward.

For removal and installation of the paper bail operation plate and LF idle gear, refer to Section 9 "Paper bail" and Section 6 "Line feed motor" respectively.

- (5) Remove the paper stopper arm and its spring from the chassis. (Fig. 10-1)

- (6) Remove the paper feed rollers.

To remove the paper feed rollers, remove the paper feed roller arms (front and rear) and their springs from the chassis. Then remove the front and rear paper feed rollers from the arms. (Fig. 10-1)

- (7) Remove the cam shaft.

To remove the cam shaft, remove the cam shaft stop ring (E-ring) on the left side of chassis, and the paper release lever stop ring (E-ring) on the right side of chassis, remove the spring from the chassis and take out the cam shaft. (Fig. 10-1)

- (8) Remove the paper release lever.

To remove the paper release lever, remove its clamp screw. (Fig. 10-1)

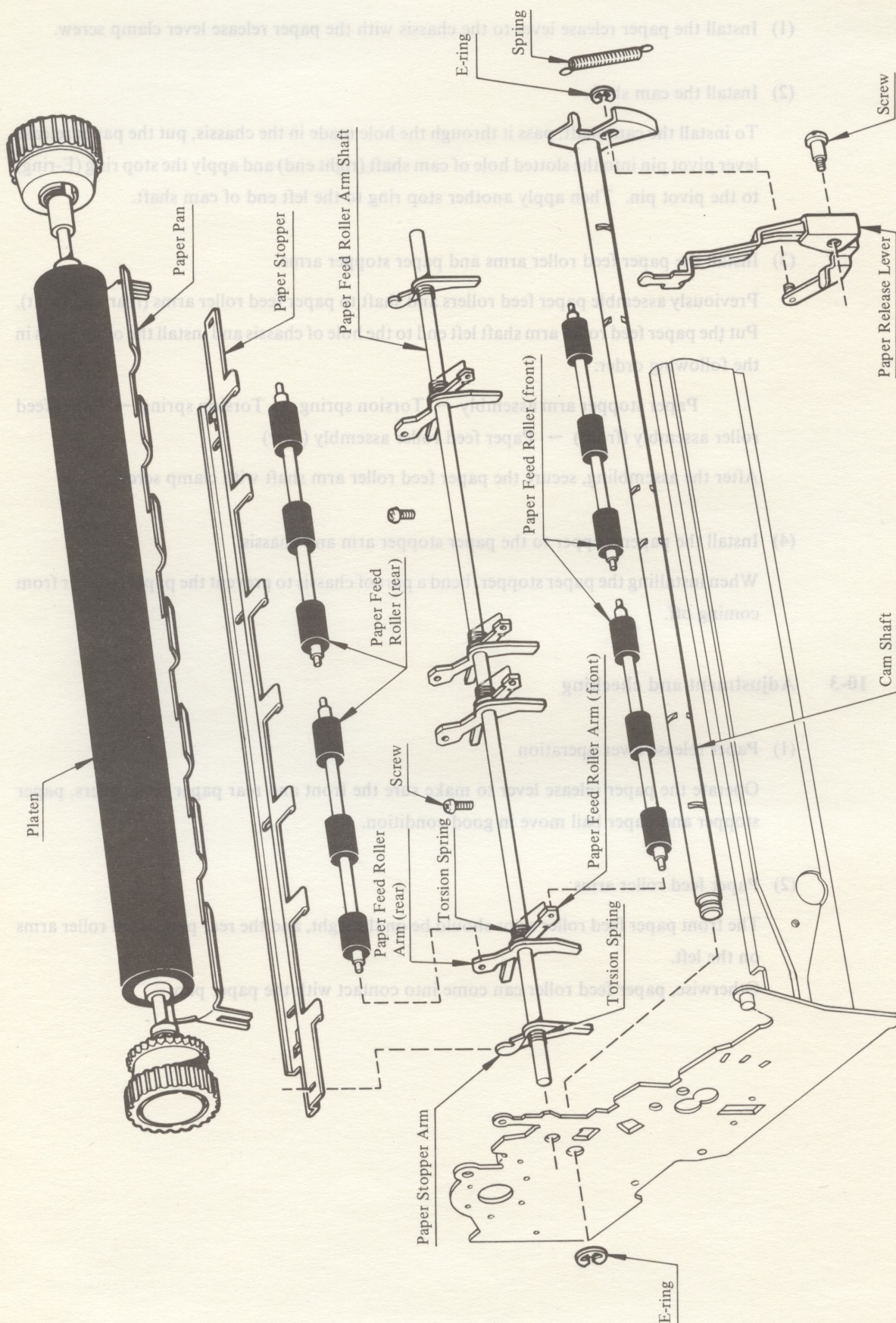


Fig. 10-1

10-2 Installation

- (1) Install the paper release lever to the chassis with the paper release lever clamp screw.

- (2) Install the cam shaft.

To install the cam shaft, pass it through the hole made in the chassis, put the paper release lever pivot pin into the slotted hole of cam shaft (right end) and apply the stop ring (E-ring) to the pivot pin. Then apply another stop ring to the left end of cam shaft.

- (3) Install the paper feed roller arms and paper stopper arms.

Previously assemble paper feed rollers and shaft to paper feed roller arms (rear and front). Put the paper feed roller arm shaft left end to the hole of chassis and install the other parts in the following order:

Paper stopper arm assembly → Torsion spring → Torsion spring → Paper feed roller assembly (front) → Paper feed roller assembly (rear)

After the assembling, secure the paper feed roller arm shaft with clamp screw.

- (4) Install the paper stopper to the paper stopper arm and chassis.

When installing the paper stopper, bend a part of chassis to prevent the paper stopper from coming off.

10-3 Adjustment and checking

- (1) Paper release lever operation

Operate the paper release lever to make sure the front and rear paper feed rollers, paper stopper and paper bail move in good condition.

- (2) Paper feed roller arms

The front paper feed roller arms should be on the right, and the rear paper feed roller arms on the left.

Otherwise, paper feed roller can come into contact with the paper pan.

11. Cover switch

11-1 Removal

- (1) Remove the upper cover.

Refer to Section 1 "Upper cover".)

- (2) Remove the cover switch connector from the logic control board.

- (3) Remove the cover switch unit.

To remove it, remove the cover switch holder clamp screw.

- (4) Disassemble the cover switch unit.

The cover switch unit can be disassembled as shown in Fig. 11-1 by removing the spring and clamp screws.

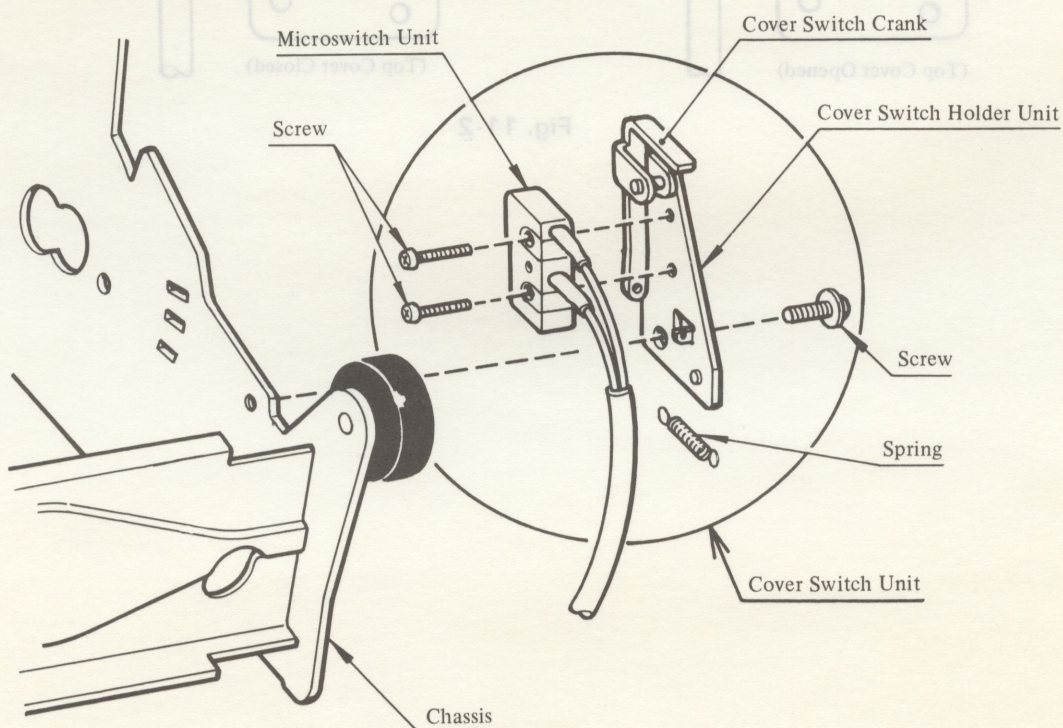


Fig. 11-1

11-2 Installation

The cover switch can be assembled and installed in the reverse steps of the installation and assembling procedure.

11-3 Adjustment and checking

(1) Cover switch operation

The cover switch crank (actuator) should be properly bent so that the 24V DC source is turned off when the top cover is opened, and turned on when closed. (Fig. 11-2)

Note that the top cover should be able to tightly close, but not float.

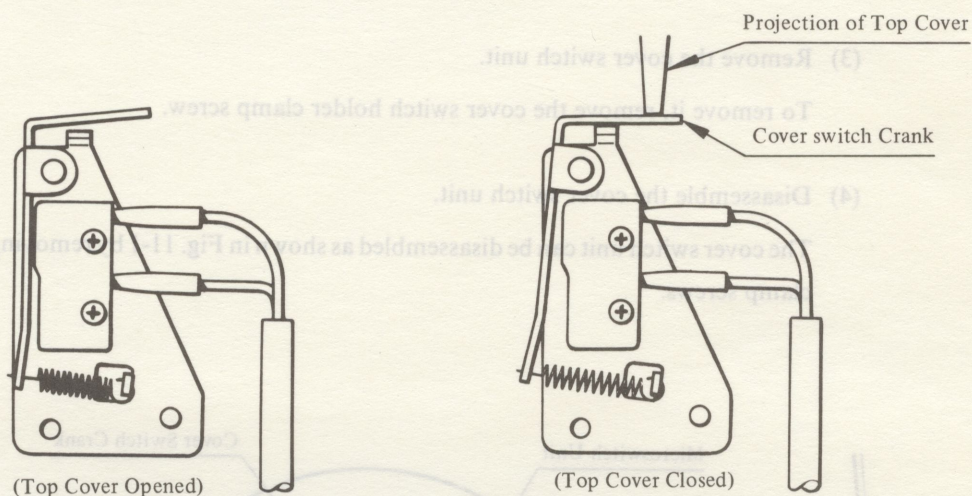


Fig. 11-2

12. Carriage head

12-1 Removal

- (1) Remove the upper cover.

Refer to Section 1 "Upper cover".

- (2) Remove the key top panel (keyboard) unit and control PC board unit, referring to Section 2 "Key top panel unit and control PC board unit".

- (3) Remove the chassis unit.

Refer to Section 3 "Chassis unit".

- (4) Remove the platen and paper pan.

- (5) Remove the carriage drive wire.

To remove, loosen the wire clamp plate screw and release the wire from the carriage head holder.

- (6) Remove the carriage guide shafts as follows:

(right guide shaft)

Remove the carriage guide shaft screw to remove the carriage guide shaft collar and spring washer.

(Left guide shaft)

Loosen the carriage adjust lever clamp screw nut and then the clamp screw (removal of the clamp screw on the right side of the carriage guide shaft holder is not required).

- (7) Remove the carriage head.

Remove the left and right rubber stoppers from the chassis. Move the carriage head rightward and disconnect the head guide from the chassis.

Hold the right end of the carriage guide shaft and lift it. While holding the guide shaft tilted, draw out the guide shaft on the left side and remove the carriage unit together with the guide shaft.

Separate the carriage guide shaft and carriage guide shaft holder.

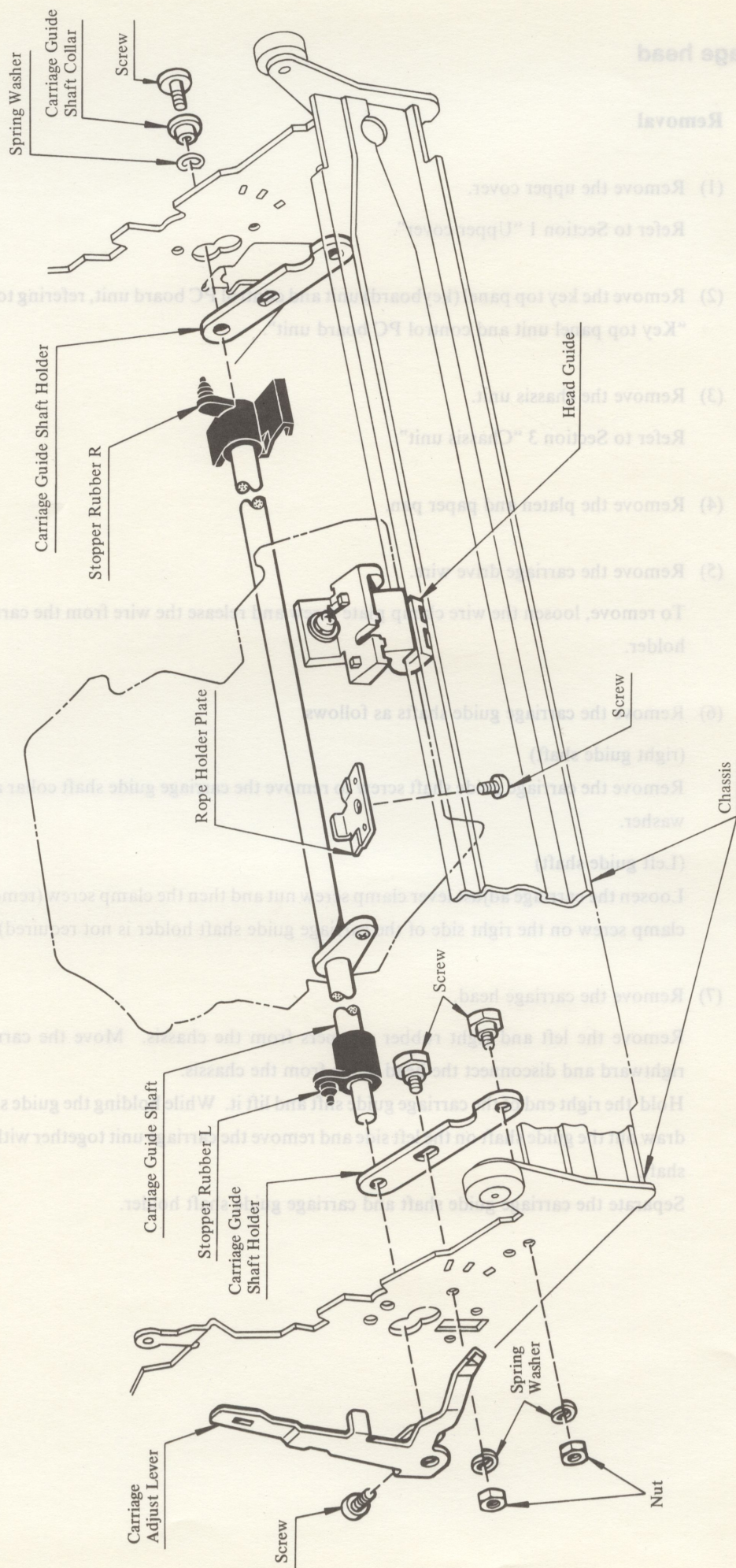


Fig. 12-1

12-2 Installation

- (1) Install the carriage head as follows:

Pass the carriage guide shaft through the carriage guide shaft bearing and install the left and right rubber stoppers to the carriage guide shaft.

Install the carriage guide shaft holder on the left side of the carriage guide shaft. Holding the carriage guide shaft, pass it through the left hole in the chassis and install to the chassis. Then joint the head guide to the chassis.

- (2) Install the carriage guide shafts as follows:

(Right carriage guide)

Attach the spring washer and carriage guide shaft collar to the carriage guide shaft screw and temporarily secure the carriage guide shaft in position.

(Left carriage guide)

Install the carriage guide shaft holder using its clamp screw and nut.
Install the carriage adjust lever.

(Right carriage guide)

After the installation of the carriage adjust lever, tighten the carriage guide shaft screw to finally secure the guide shaft in position.

- (3) Install the left and right rubber stoppers to the chassis.
- (4) Install other parts in the steps reverse to the steps (1) ~ (5) for removal.

Fig. 12-2

12-3 Adjustment and checking

(1) Carriage adjuster lever

Adjust the gap between the carriage adjust lever and the chassis to 0.4 ~ 1.0 mm. The adjustment can be made on the carriage guide shaft screw. (Fig. 12-2)

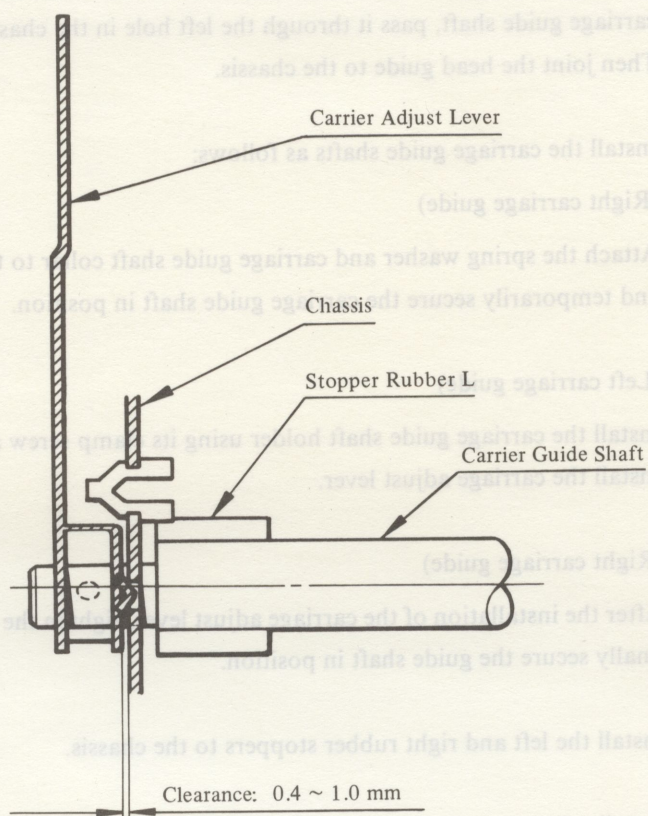


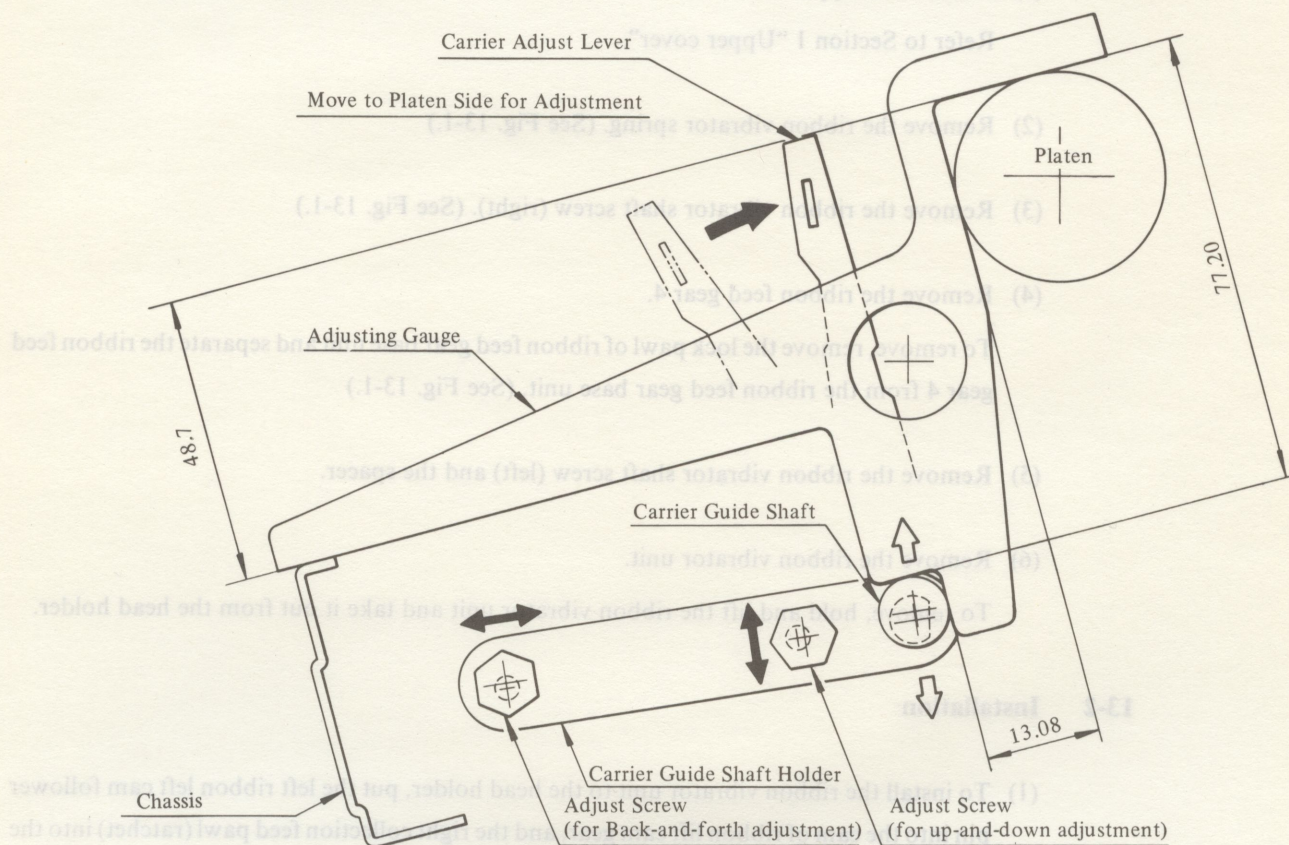
Fig. 12-2

(2) Carriage head home position

For adjustment of carriage head home position, refer to Section 4 "Carriage motor".

(3) Carriage guide shaft position

While fully pressing the carriage adjust lever toward the platen, adjust the carriage guide shaft holder position so that the dimensions shown in Fig. 12-3 are assured. The adjustment is made with the special tool and by turning the adjust screws (eccentric screws). (See Fig. 12-3.)

**Fig. 12-3**

If printed character is faint at upper part or lower part, turn the adjust screws (for vertical adjustment) to remove the carriage guide shaft upward or downward.

When printed character is faint at lower part Move the shaft upward (1)

When printed character is faint at upper part Move the shaft downward (2)

In this adjustment, care should be taken to assure alignment of printed character with the reference line on the paper meter (refer to Section 19 "Paper meter").

This adjustment should be made at the left and right ends of the guide shaft and errors in crosswise direction and vertical direction should be smaller than 0.2 mm.

13. Ribbon vibrator unit

13-1 Removal

- (1) Remove the upper cover.

Refer to Section 1 "Upper cover".

- (2) Remove the ribbon vibrator spring. (See Fig. 13-1.)

- (3) Remove the ribbon vibrator shaft screw (right). (See Fig. 13-1.)

- (4) Remove the ribbon feed gear 4.

To remove, remove the lock pawl of ribbon feed gear base unit and separate the ribbon feed gear 4 from the ribbon feed gear base unit. (See Fig. 13-1.)

- (5) Remove the ribbon vibrator shaft screw (left) and the spacer.

- (6) Remove the ribbon vibrator unit.

To remove, hold and lift the ribbon vibrator unit and take it out from the head holder.

13-2 Installation

- (1) To install the ribbon vibrator unit to the head holder, put the left ribbon left cam follower pin into the cam of ribbon lift cam gear, and the right collection feed pawl (ratchet) into the collection feed crank guide.

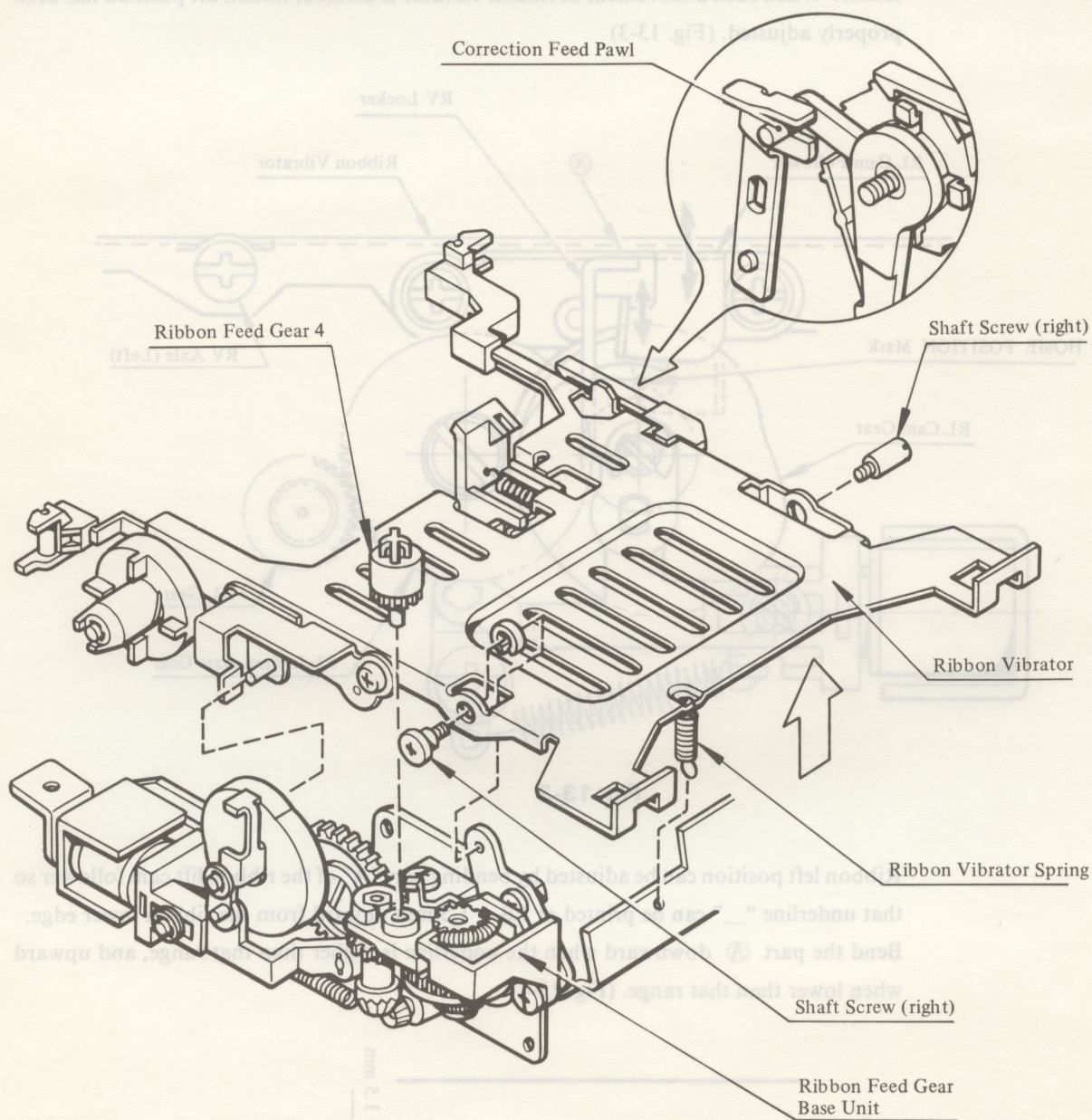


Fig. 13-1

13-3 Adjustment and checking

(1) Ribbon left adjustment

The ribbon vibrator should move until the RL cam follower comes into contact with the RL locker. When such a movement of ribbon vibrator is assured, ribbon lift position has been properly adjusted. (Fig. 13-3)

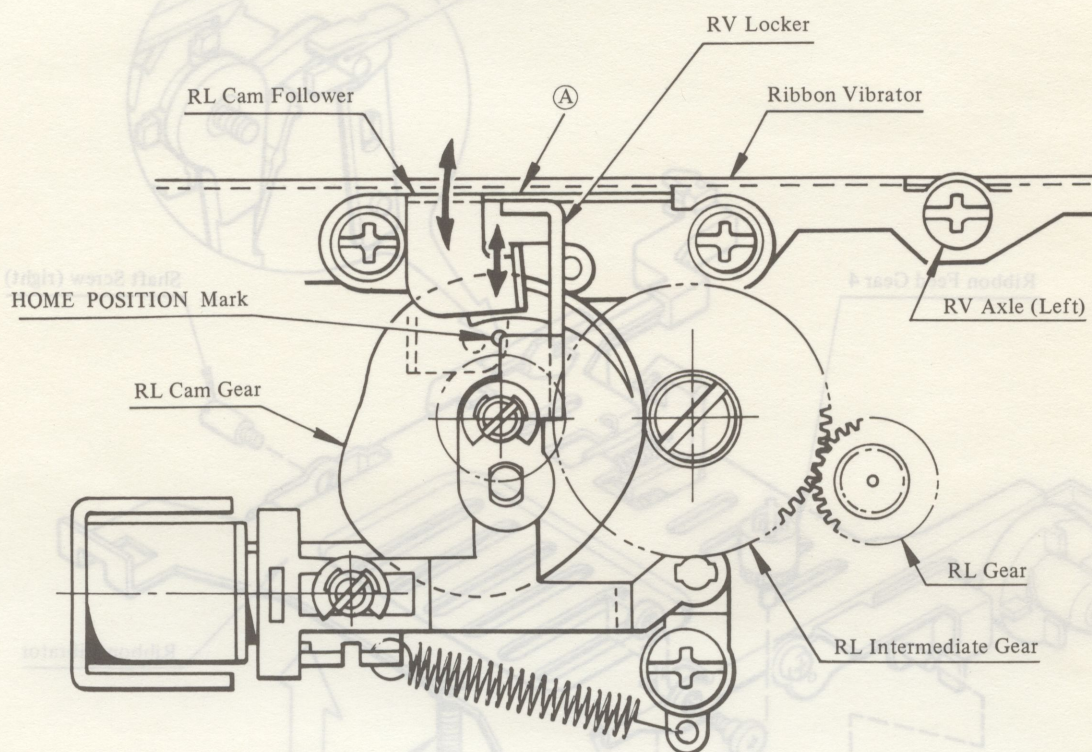


Fig. 13-3

Ribbon left position can be adjusted by bending part "A" of the ribbon lift cam follower so that underline "—" can be printed at 1.0 ~ 1.5 mm upward from the ribbon lower edge. Bend the part ① downward when the underline is higher than that range, and upward when lower than that range. (Fig. 13-4)

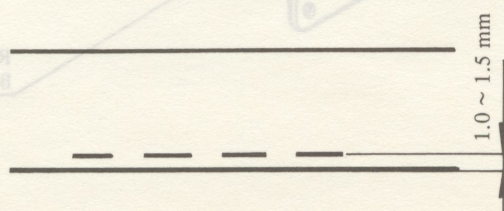


Fig. 13-4

14. Relay circuit board

14-1 Removal

- (1) Remove the upper cover.

Refer to Section 1 "Upper cover".

- (2) Remove the ribbon vibrator unit.

Refer to Section 13 "Ribbon vibrator".

- (3) Unplug the flat cable connector on the logic control board and then release the flat cable from the flat cable clamp at the cover bottom.

- (4) Remove all connector on the relay circuit board. (Fig. 14-1)

- (5) Remove the relay circuit board

To remove it, remove the flat cable holder clamp screws and spring and take out the PC board from the head holder.

14-2 Installation

The relay circuit board can be installed in the reverse step of the removing procedure.

14-3 Adjustment and checking

- (1) Install the connectors.

Each connector is discriminated from other by number of pins and color. Noting number of pins and color, correctly install each connector in the following order:

1. Wheel motor connector (White, 5 pins)
2. Head indicator LED connector (White, 2 pins)
3. Hammer solenoid connector (Red, 2 pins)
4. Correction solenoid connector (Black, 2 pins)
5. Wheel motor detector connector (White, 3 pins)
6. Ribbon lift detector connector (Red, 3 pins)
7. Ribbon motor connector (White, 6 pins)

- (2) Flat cable location

Bend the flat cable at right angle avoiding its contact with the chassis right wall and head holder when the head holder is fully moved rightward and secure to the head holder.

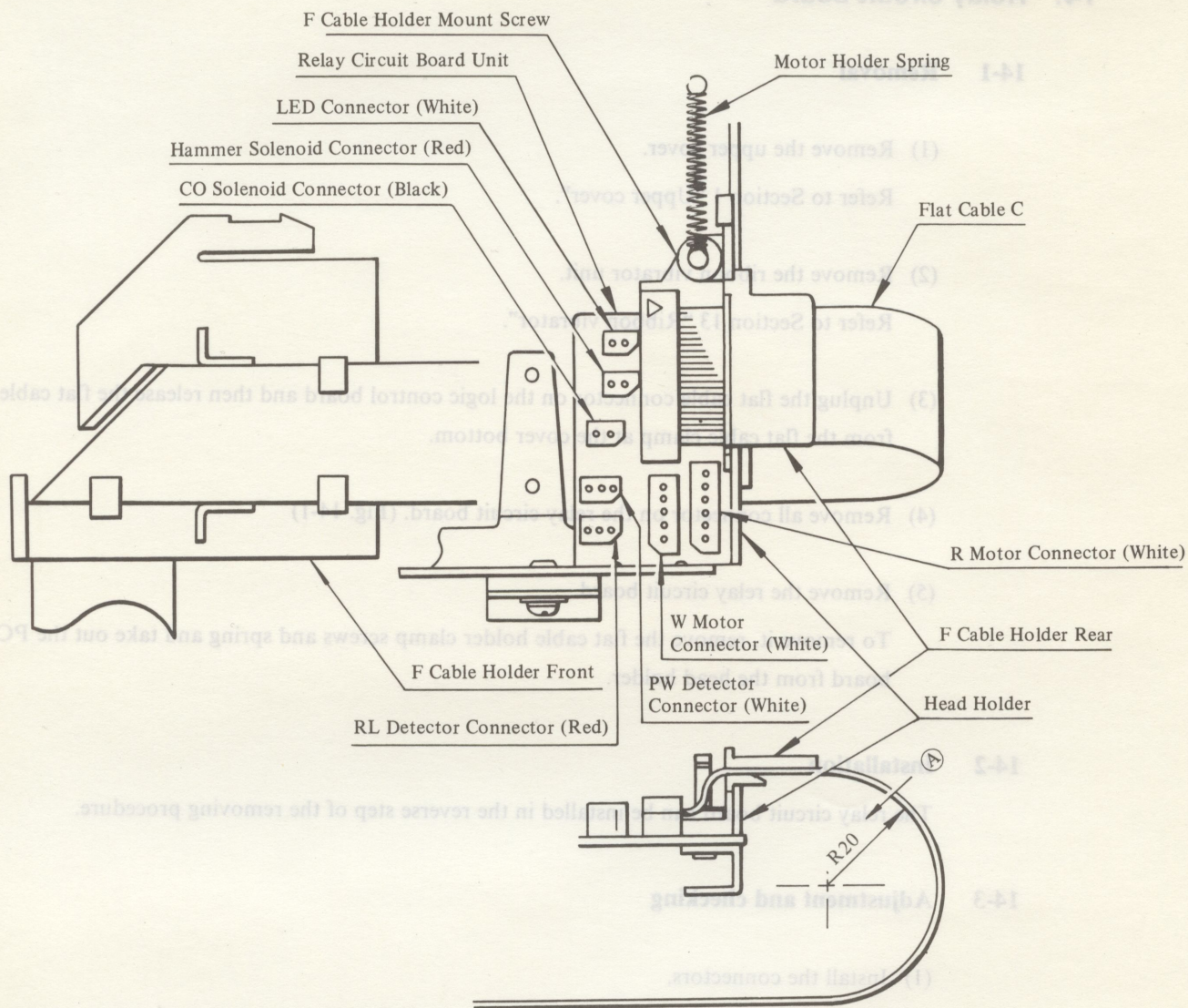


Fig. 14-1

15. Ribbon motor

15-1 Removal

- (1) Remove the chassis unit.

Refer to Section 3 "Chassis unit".

- (2) Remove the ribbon vibrator.

Refer to Section 13 "Ribbon vibrator".

- (3) Remove the ribbon motor connector from the relay circuit board.

- (4) Remove the ribbon feed gear base unit.

To remove the ribbon feed gear base unit, remove its mounting screw.

- (5) Remove the ribbon lift operating gear.

To remove the ribbon lift operating gear, loosen its set screw and separate the gear.

- (6) Remove the ribbon motor.

To remove the ribbon motor, remove the ribbon motor mounting screws and nuts and cut four cord keeps and take out the ribbon motor from the head holder. (Fig. 15-1)

15-2 Installation

The ribbon motor can be installed in the reverse steps of the removing procedure. For installation, new cord keepers are necessary.

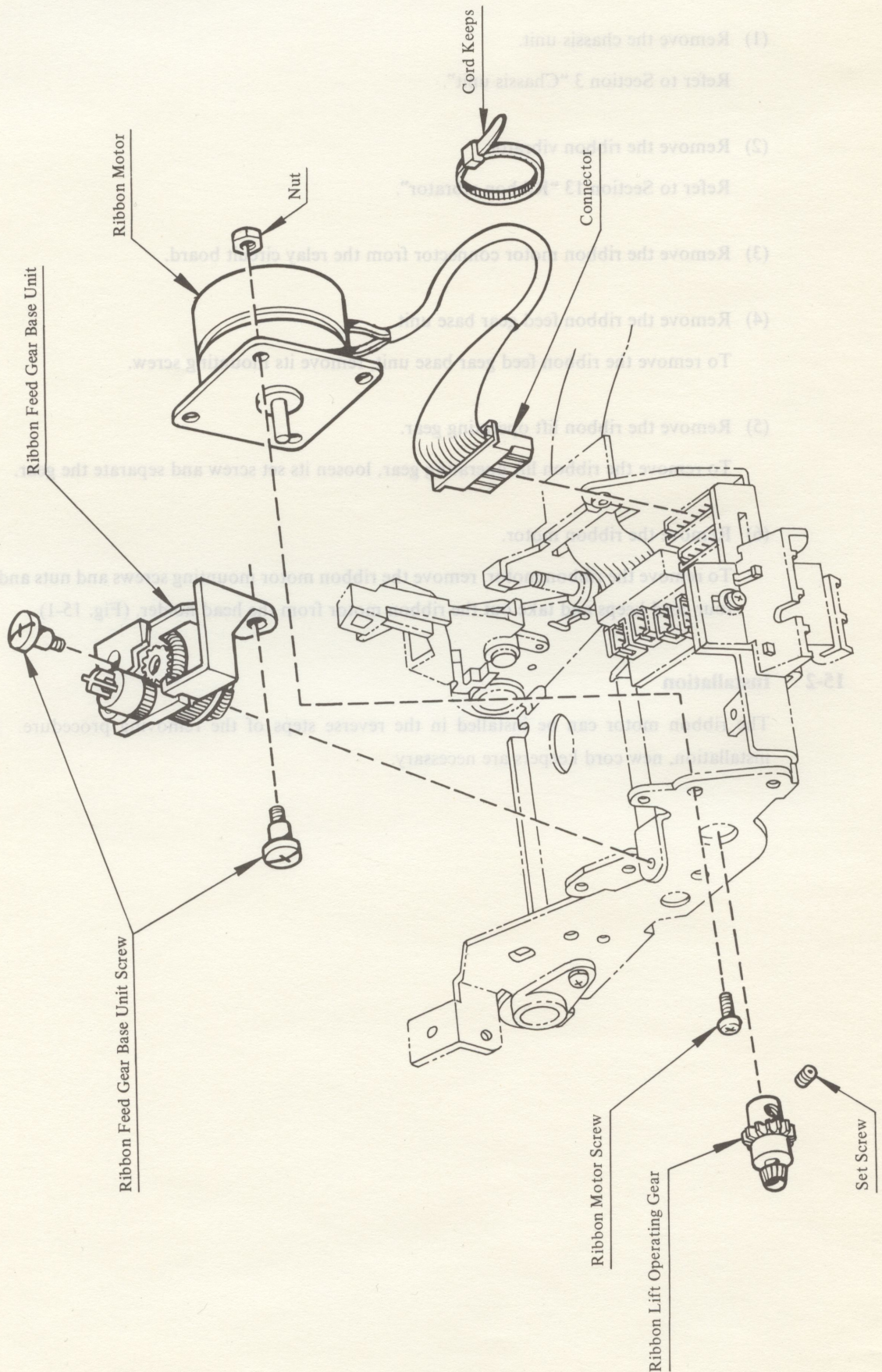


Fig. 15-1

15-3 Adjustment and checking

(1) Ribbon motor and cam home position adjustment

For this adjustment, use the special checker (CH-60).

The home position of ribbon motor shaft is detected by the ribbon motor detector and the ribbon lift home position actuator installed on the ribbon motor shaft.

The ribbon motor home position corresponds to the ribbon left cam gear home position, and also to the ribbon vibrator home position (ribbon down position).

1. Connect the checker to the following connectors ((a) ~ (c))
 - (a) Ribbon motor detector connector
 - (b) Ribbon motor connector
 - (c) Power cord connector
2. Set the MOTOR SELECT switch of checker to "RB" position and turn on the typewriter. The ribbon motor will start running and stop with its shaft indexed at the home position. Loosen the ribbon lift home position actuator set screw and nut and move the ribbon lift home position actuator to adjust so that the ribbon lift home position actuator is found at the center of the slit of ribbon motor detector when the motor shaft is indexed as described above. (Fig. 15-2)

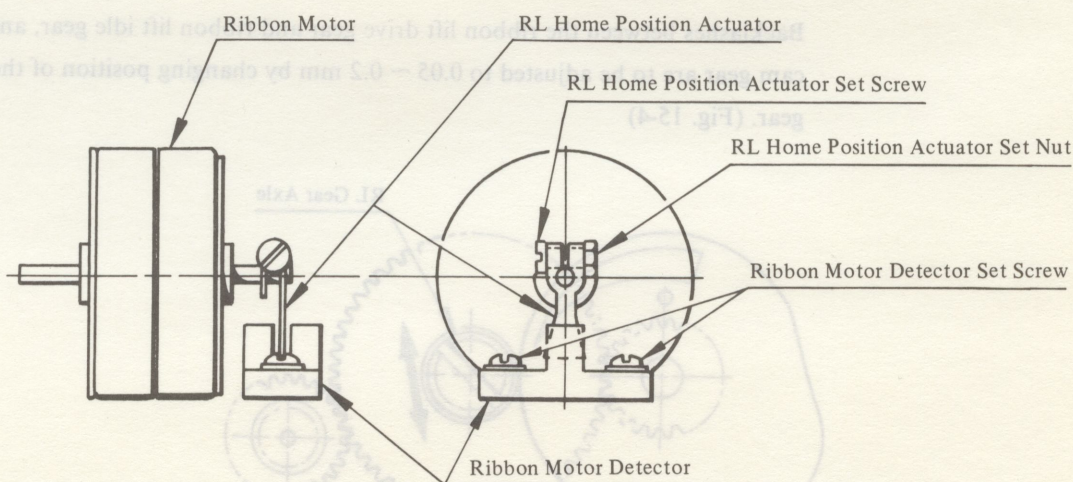


Fig. 15-2

It should be noted that the "HOME POSITION" mark on the ribbon lift cam gear must be located just above the center of the ribbon lift cam gear shaft when the ribbon motor shaft is indexed (when the ribbon motor is turned on, and stopped with its shaft indexed at the home position).

For this adjustment, remove the ribbon lift cam gear stop ring and ribbon vibrator locker and change meshing between the ribbon lift cam gear and the ribbon lift idle gear. (Fig. 15-3)

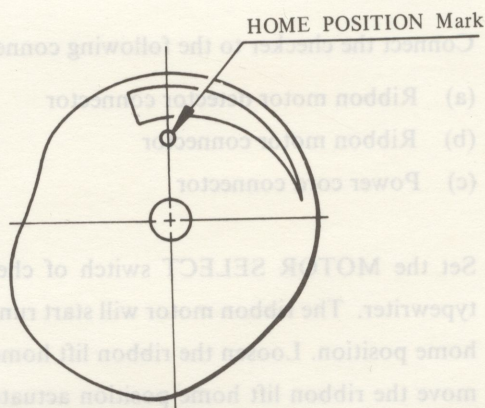


Fig. 15-3

(2) Backlash adjustment

Backlashes between the ribbon lift drive gear and ribbon lift idle gear, and the ribbon lift cam gear are to be adjusted to 0.05 ~ 0.2 mm by changing position of the ribbon lift idle gear. (Fig. 15-4)

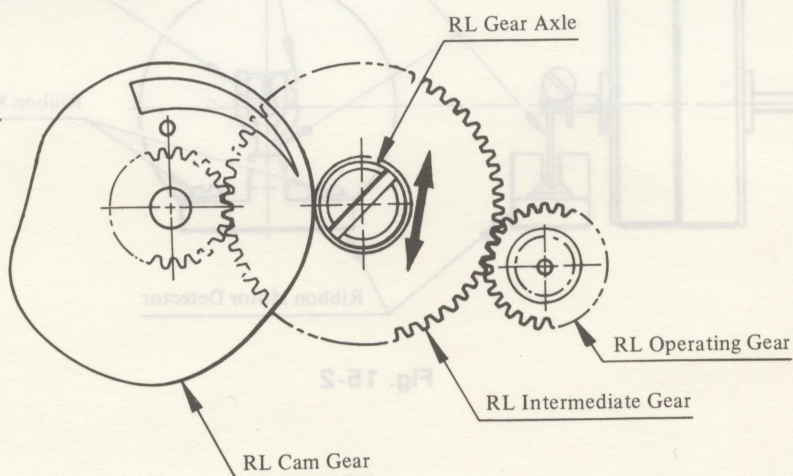


Fig. 15-4

16. Correction solenoid

16-1 Removal

- (1) Remove the chassis unit.

Refer to Section 3 "Chassis unit".

- (2) Remove the ribbon vibrator unit.

Refer to Section 13 "Ribbon vibrator unit".

- (3) Remove the correction solenoid connector from the relay circuit board.

- (4) Remove the correction trigger link spring.

- (5) Remove the correction solenoid.

To remove the correction solenoid, remove the correction link plate shaft screw and take out the solenoid from the head holder. then cut three cord keepers. (Fig. 16-1)

16-2 Installation

Install the correction solenoid in the reverse steps of the removing procedure. For installation, new cord keepers should be prepared.

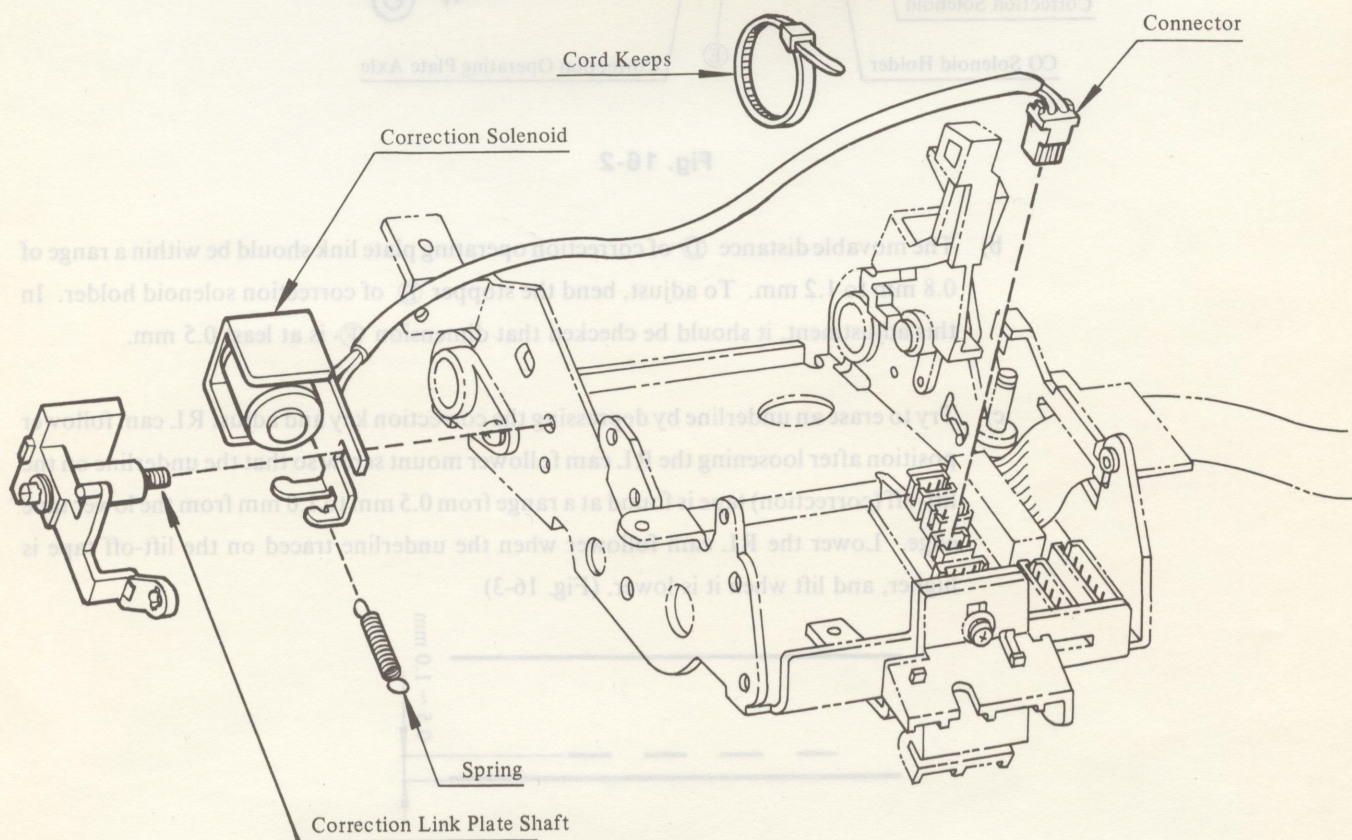


Fig. 16-1

16-3 Adjustment and checking

(1) Correction adjustment

- a) Move the correction operating plate link by hand and, while keeping it in contact with the correction solenoid, loosen the correction operating plate link shaft screw and properly position the correction solenoid holder so that gap ③ between the RL cam follower and the RL locker is within a range from 0.5 mm to 1.0 mm. (Fig. 16-2)

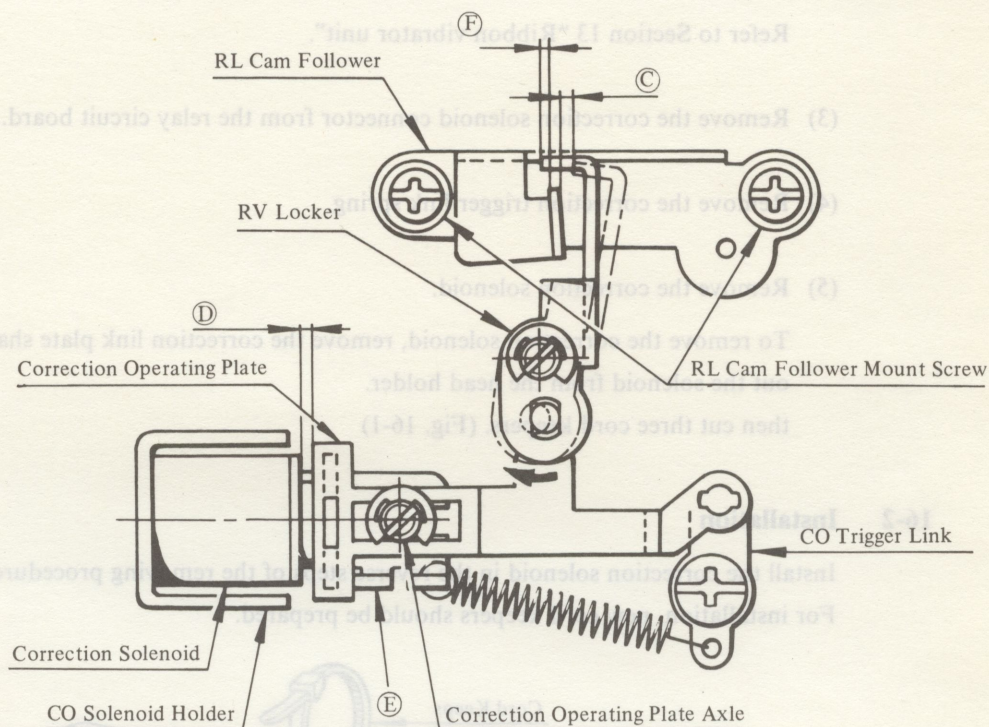


Fig. 16-2

- b) The movable distance ④ of correction operating plate link should be within a range of 0.8 mm to 1.2 mm. To adjust, bend the stopper ⑤ of correction solenoid holder. In this adjustment, it should be checked that dimension ⑥ is at least 0.5 mm.
- c) Try to erase an underline by depressing the correction key and adjust RL cam follower position after loosening the RL cam follower mount screw so that the underline on the lift-off (correction) tape is found at a range from 0.5 mm to 1.0 mm from the lower tape edge. Lower the RL cam follower when the underline traced on the lift-off tape is higher, and lift when it is lower. (Fig. 16-3)

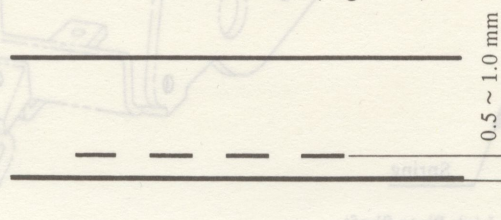


Fig. 16-3

Note: Since position lifted ribbon changes when the RL cam follower position is changed, check the position of lifted ribbon when correction tape lift is adjusted.

(2) Correction tape feed adjustment

While pressing the correction operating plate toward the correction solenoid by hand, turn the RL operating gear to let go up the ribbon vibrator to the correcting position.

Then, with the correction operating plate pressed toward the correction solenoid, carefully depress downward the ribbon vibrator. In this operation, the correction spool stop wheels should turn by one step (one tooth) and the overrun should be within a range from 1 mm to 3 mm.

When the ribbon vibrator is released from hand, the correction feed pawl is engaged with the next tooth of correction spool stop wheel.

To adjust, vertically move and position the correction feed crank guide. (Fig. 16-4)

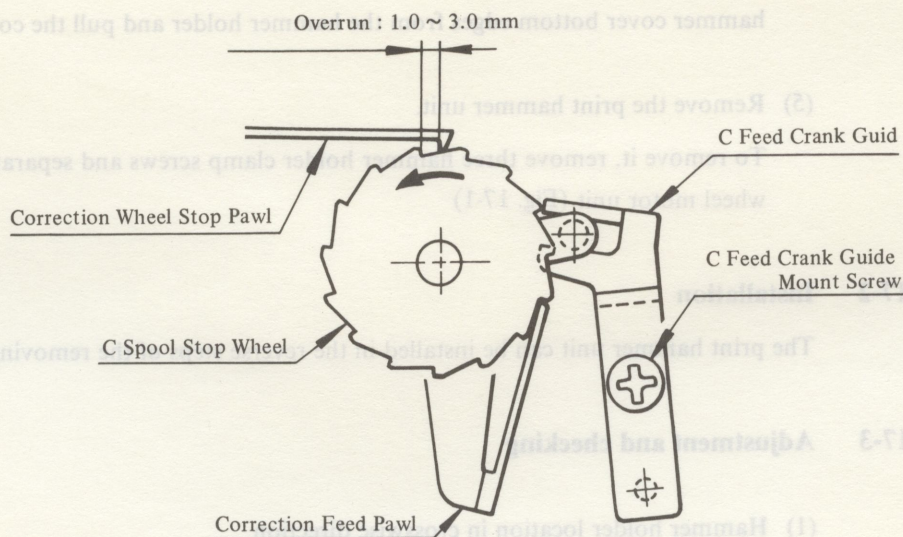


Fig. 16-4

17. Print hammer unit

17-1 Removal

- (1) Remove the upper cover.

Refer to Section 1 "Upper cover".

- (2) Remove the ribbon vibrator unit.

Refer to Section 13 "Ribbon vibrator".

- (3) Remove the hammer solenoid connector from the junction PC board.

- (4) Remove the hammer cover.

To remove is, press inward the left and right side walls of hammer cover to release the hammer cover bottom edges from the hammer holder and pull the cover.(Fig. 17-1)

- (5) Remove the print hammer unit.

To remove it, remove three hammer holder clamp screws and separate the unit from the wheel motor unit.(Fig. 17-1)

17-2 Installation

The print hammer unit can be installed in the reverse steps of the removing procedure.

17-3 Adjustment and checking

- (1) Hammer holder location in crosswise direction

Loosen the hammer holder clamp screws and properly position the hammer holder so that any character can be printed with even boldness in vertical direction when print hammer stroke © is within a range from 7.4 mm to 8.0 mm.

Move the hammer holder forward if printed character is faint at its lower part, and move backward if faint at its upper part. (Fig. 17-2)

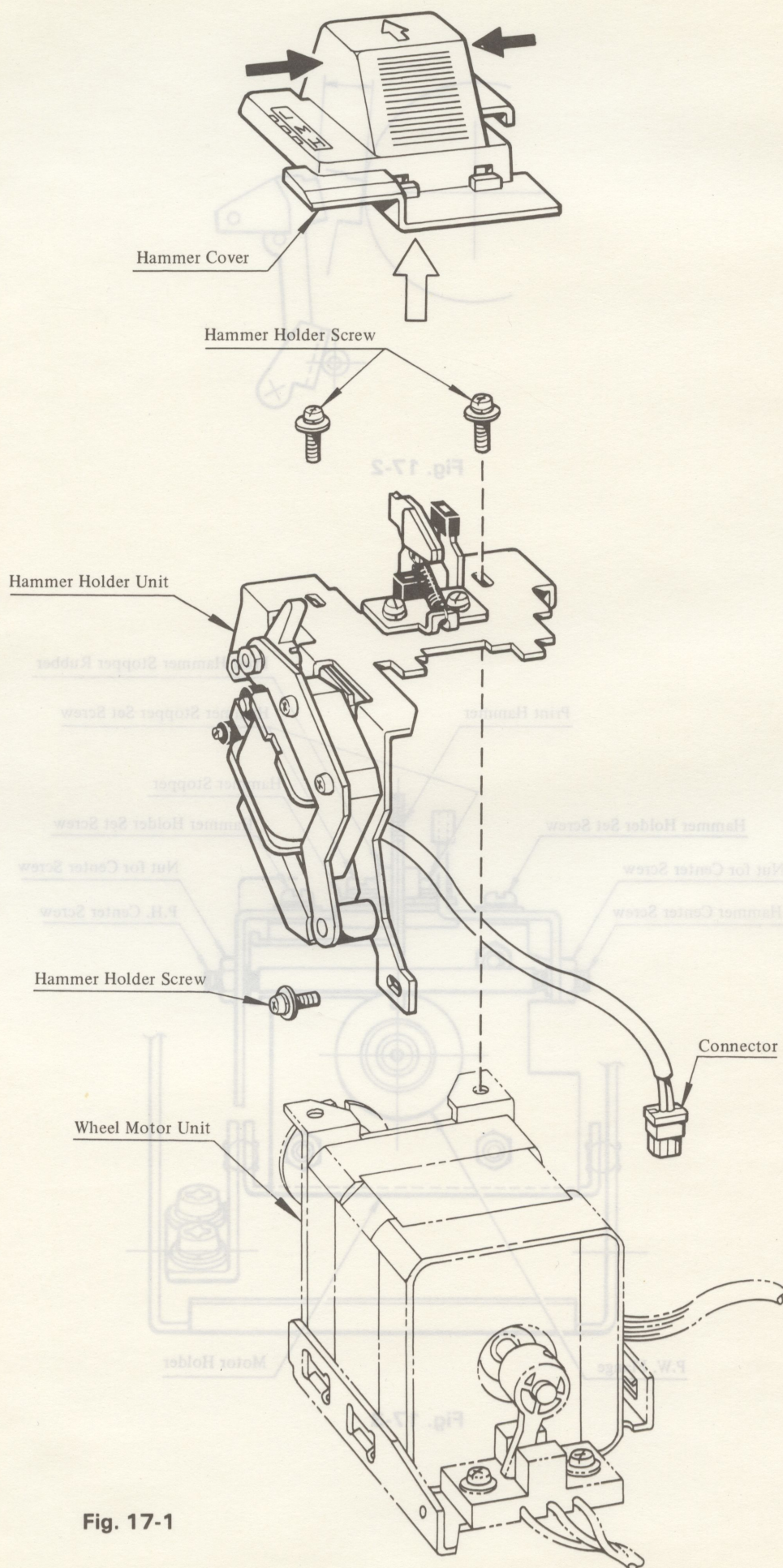


Fig. 17-1

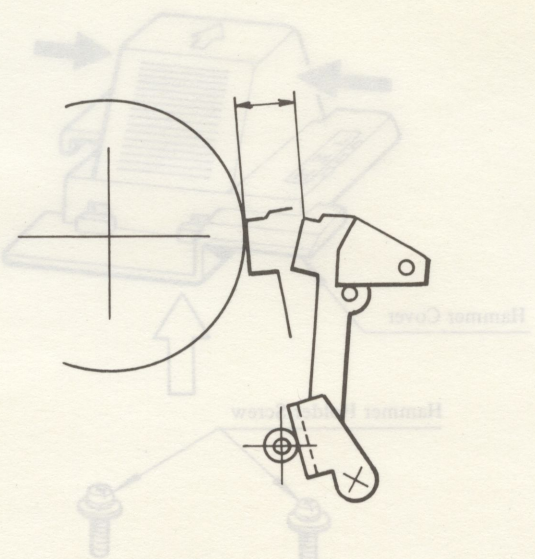


Fig. 17-2

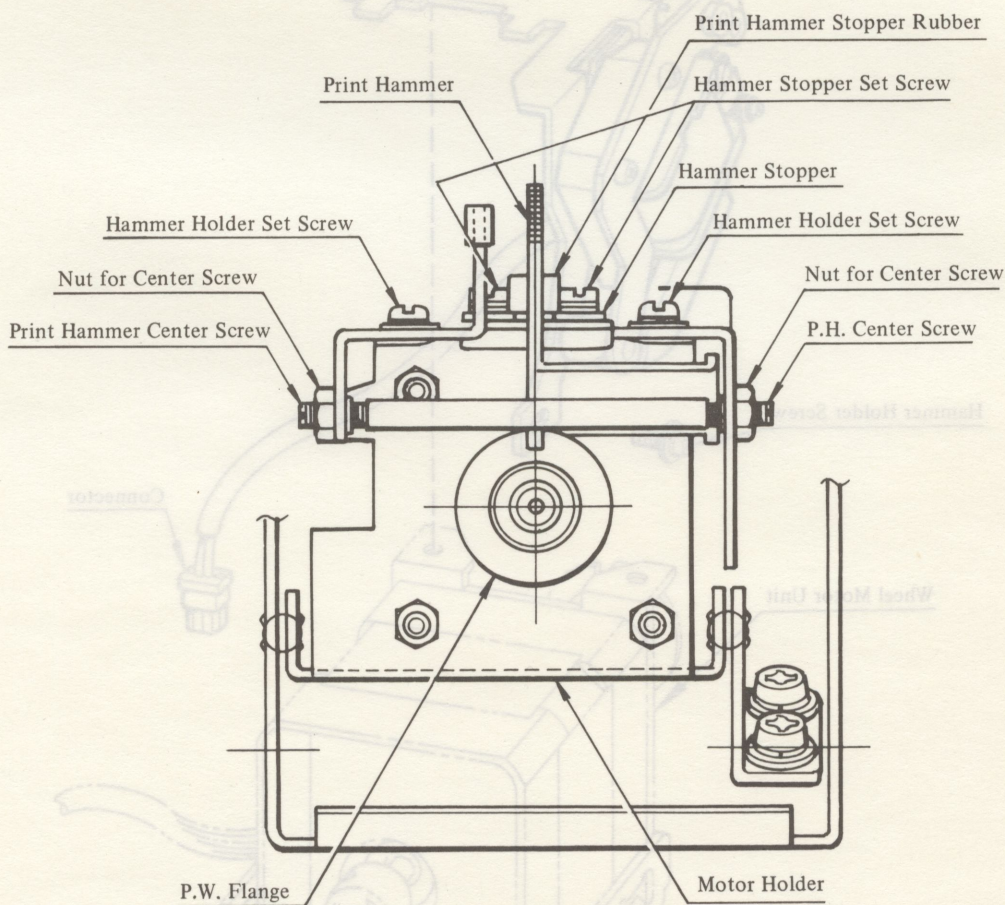


Fig. 17-3

(2) Hammer location in lengthwise direction (platen axial direction)

Turn on the power and make sure that the wheel is properly indexed (character “,” is found at the top), and that the center of the character is in line with the V groove of the hammer. If the hammer is out of alignment over 0.3 mm, loosen the left and right print hammer centering screw nuts and turn the centering screws to properly position the hammer. After the adjustment, make sure the print hammer can move with its gravity without lateral play when the hammer spring is removed. (Fig. 17-3, 17-4)

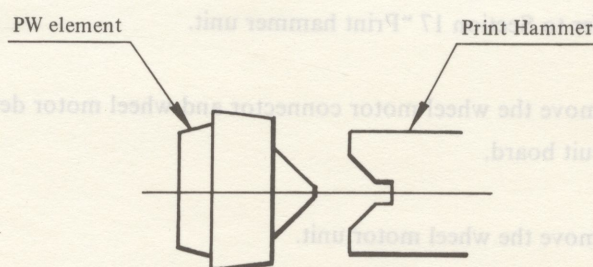


Fig. 17-4

18. Wheel motor unit

18-1 Removal

- (1) Remove the chassis unit.

Refer to Section 3 "Chassis unit".

- (2) Remove the ribbon vibrator.

Refer to Section 17 "Print hammer unit."

- (4) Remove the wheel motor connector and wheel motor detector connector from the relay circuit board.

- (5) Remove the wheel motor unit.

To remove the wheel motor unit, remove the spring of wheel motor unit and the motor holder guide clamp screw.

The wheel motor unit can be separated together with four balls used to slide the wheel motor from the head holder. (Fig. 18-1)

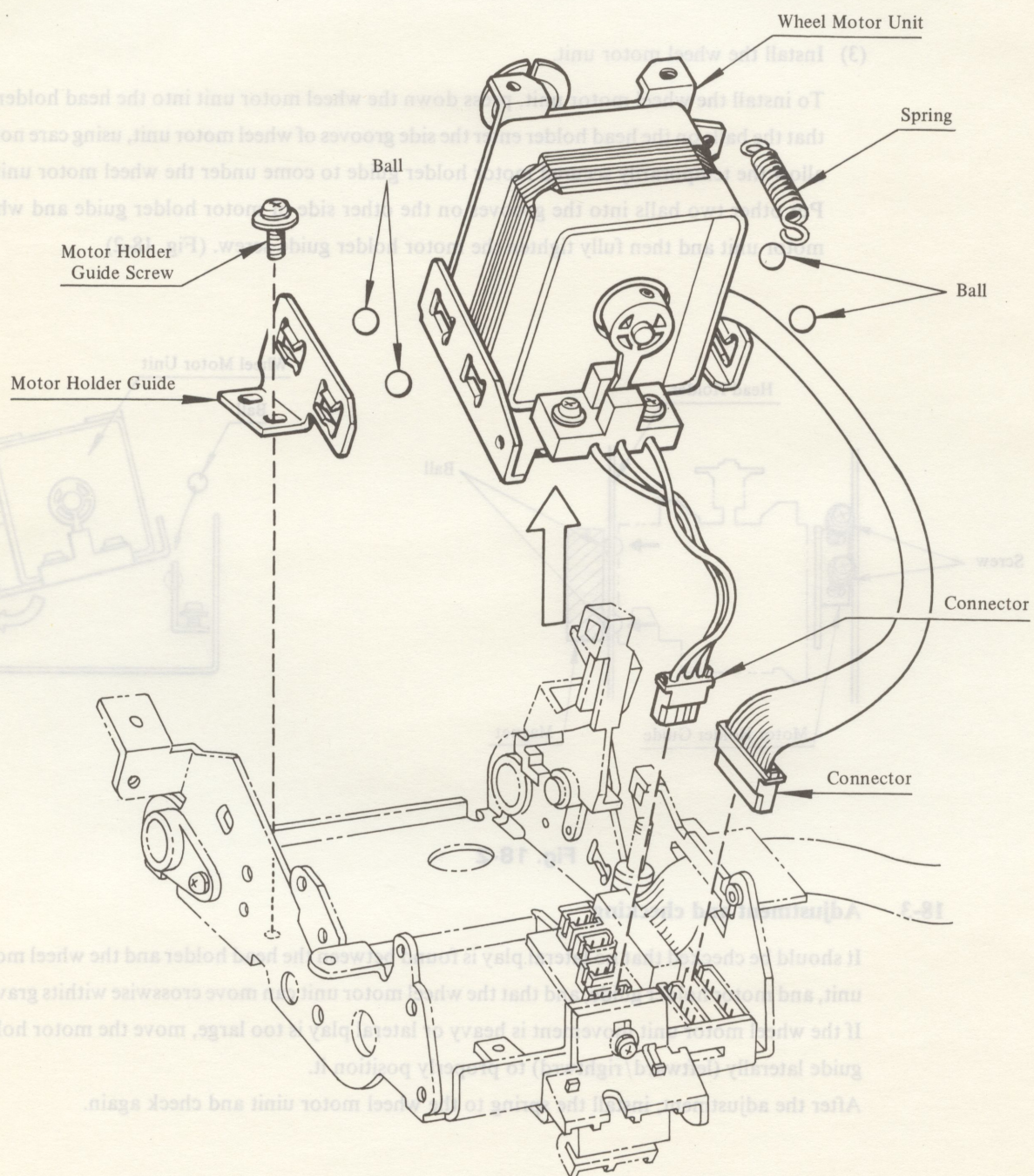


Fig. 18-1

18-2 Installation

- (1) Put two balls into the head holder side, using a magnet.
- (2) Temporarily secure the motor holder guide to the head holder.
- (3) Install the wheel motor unit.

To install the wheel motor unit, press down the wheel motor unit into the head holder so that the balls on the head holder enter the side grooves of wheel motor unit, using care not to allow the temporarily secured motor holder guide to come under the wheel motor unit.

Put other two balls into the grooves on the other side of motor holder guide and wheel motor unit and then fully tighten the motor holder guide screw. (Fig. 18-2)

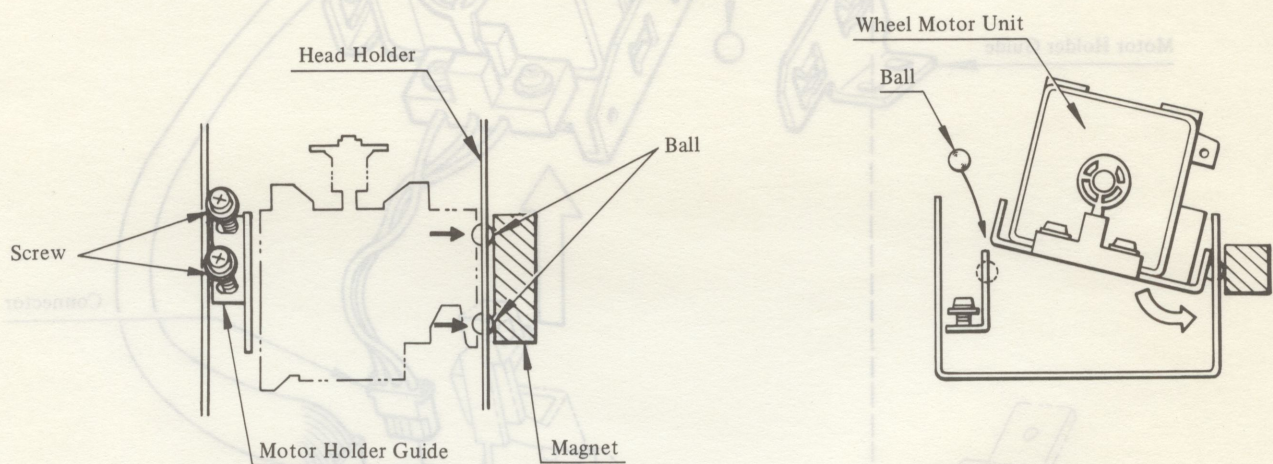


Fig. 18-2

18-3 Adjustment and checking

It should be checked that no lateral play is found between the head holder and the wheel motor unit, and motor holder guide, and that the wheel motor unit can move crosswise with its gravity. If the wheel motor unit movement is heavy or lateral play is too large, move the motor holder guide laterally (leftward/rightward) to properly position it.

After the adjustment, install the spring to the wheel motor unit and check again.

19. Head indicator

19-1 Removal

- (1) Remove the upper cover.

Refer to Section 1 "Upper cover".

- (2) Refer to Section 13 "Ribbon vibrator".

- (3) Remove the head indicator connector from the relay circuit board.

- (4) Remove the head indicator clamp screw and stopper plate, after remove the the head indicator to the head holder. (Fig. 18-1)

19-2 Installation

The head indicator can be installed again in the reverse steps of the removing procedure.

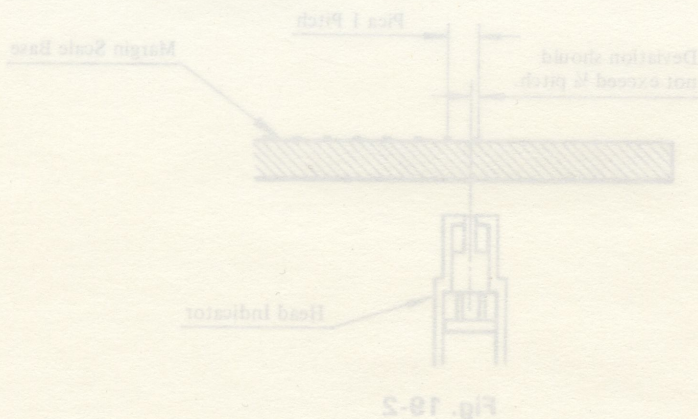
19-3 Adjustment and checking

- (1) Head indicator location

Install the upper cover, turn on the power.

When the carriage head is located at "0" position, "0" on the margin scale base should be in line with the hed indicator LED.

If the head indicator LED is out of alignment over 1/4 of PICA pitch, adjust the LED position. (Fig. 19-1, 19-2)



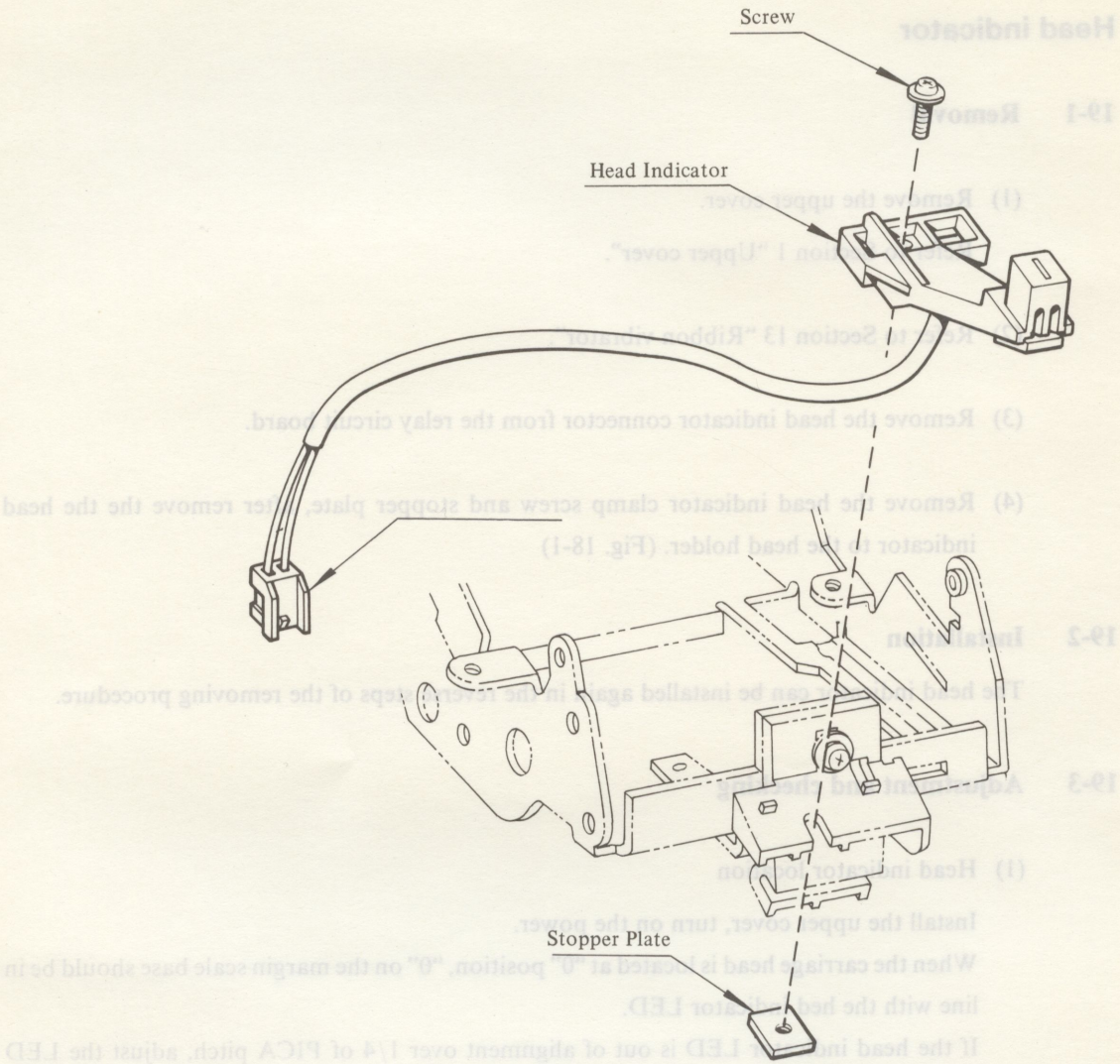


Fig. 19-1

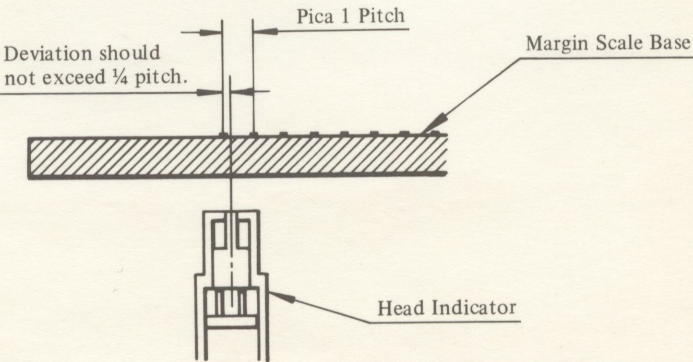


Fig. 19-2

20-3 Adjustment and checking

(1) Gap between paper meter and platen

Gap (a) between the paper meter and the platen should be within a range from 0.1 mm to 0.3 mm.

To adjust, bend the rear PW cassette guide. (Fig. 20-2)

(2) Clearance between paper meter and ribbon guide.

Clearance (b) between the paper meter and the ribbon guide should be within a range from 0.9 mm to 1.2 mm.

To adjust, bend the ribbon guide. (Fig. 20-2)

(3) The lengthwise scale line on the paper meter should be within the specified range (print character "I" to check). To adjust loosen the paper meter mounting screws and properly position the paper meter. (Fig. 20-3)

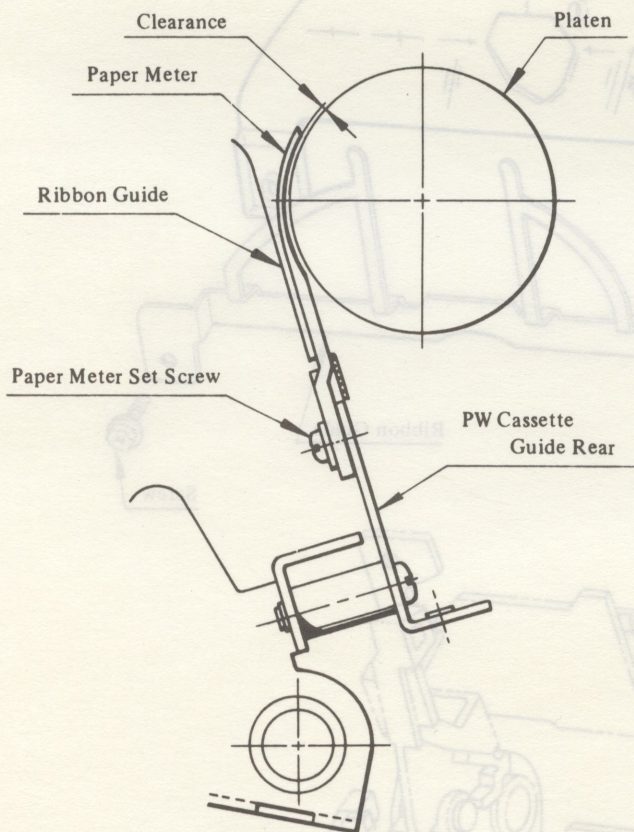


Fig. 20-2

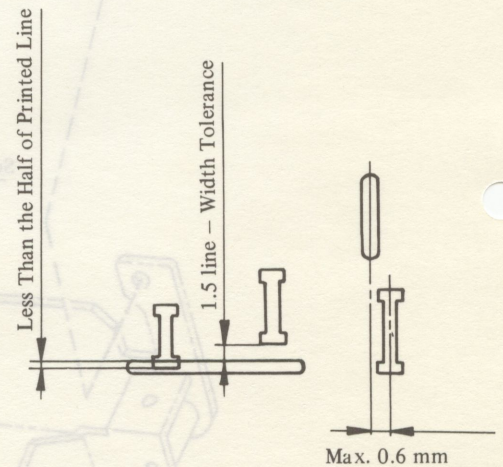


Fig. 20-3

21. PW cassette guide

21-1 Removal

- (1) Remove the carriage unit.

Refer to Section 12 "Carriage unit".

- (2) Remove the paper meter and ribbon guide.

Refer to Section 20 "Paper meter and ribbon guide".

- (3) Remove the PW cassette guide rear.

To remove the PW cassette guide rear, remove two mounting screws and separate the PW cassette guide rear from the head holder.

- (4) Remove the PW cassette guide front.

To remove the PW cassette guide front, remove two mounting screws and separate. (Fig. 21-1)

21-2 Installation

The PW cassette guide can be installed again in the reverse steps of the removing procedure.

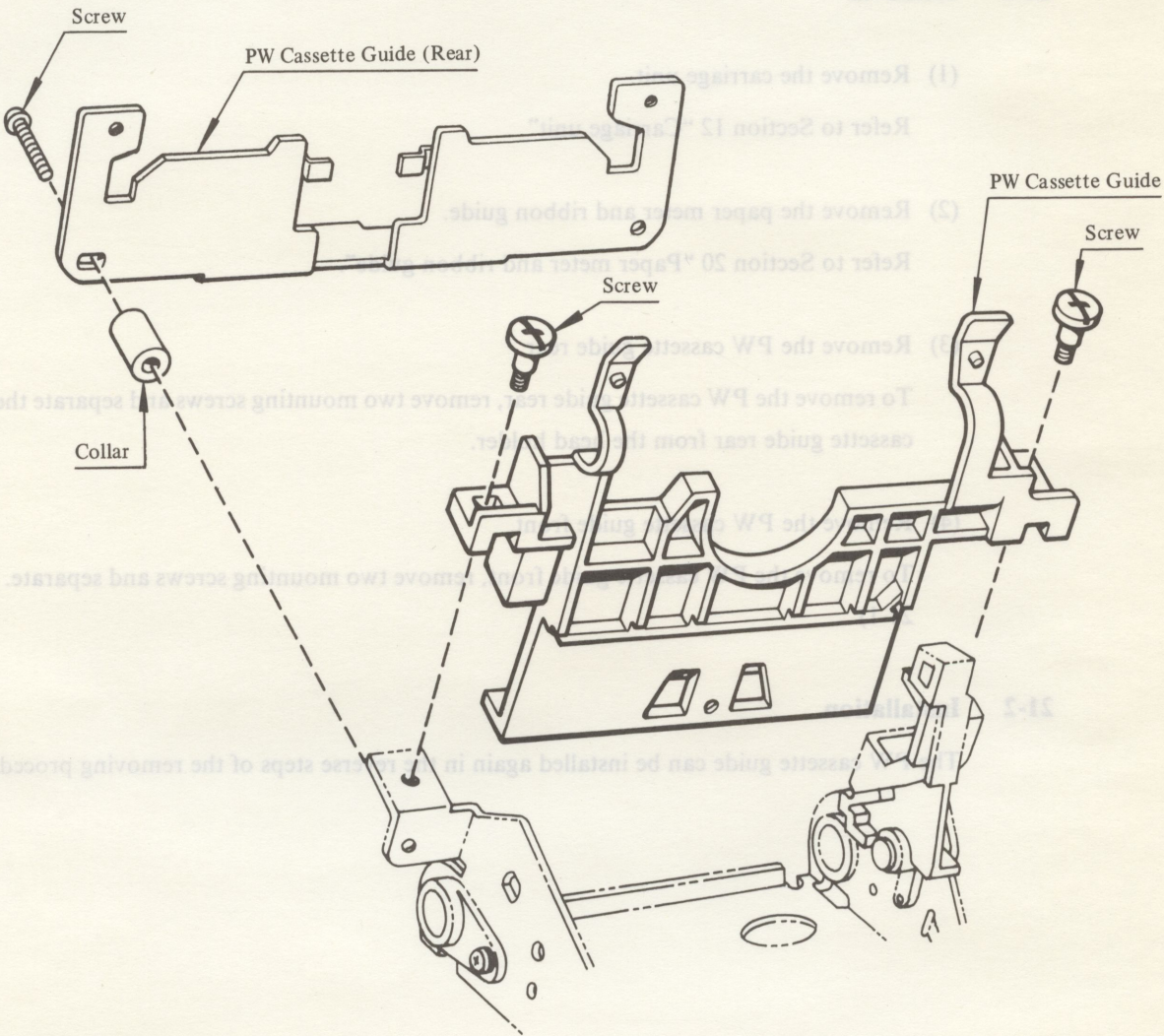


Fig. 21-1

21-3 Adjustment and checking

(1) PW cassette guide position

Move crosswise the PW cassette guide front and position it so that gap between the character element and the PW cassette is parallel, and that distance ① is $6.6^{+0.3}_0$ mm. (Fig. 21-2)

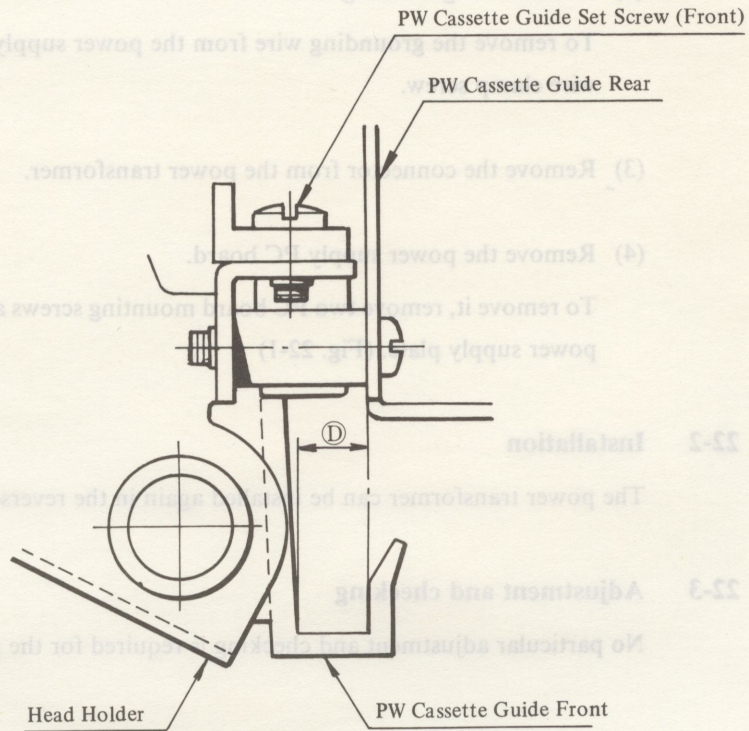


Fig. 21-2

22. Power supply circuit board

22-1 Removal

- (1) Remove the chassis unit.

Refer to Section 3 "Chassis unit".

- (2) Remove the grounding wire.

To remove the grounding wire from the power supply PC board, remove the grounding wire clamp screw.

- (3) Remove the connector from the power transformer.

- (4) Remove the power supply PC board.

To remove it, remove two PC board mounting screws and separate the PC board from the power supply plate. (Fig. 22-1)

22-2 Installation

The power transformer can be installed again in the reverse steps of the removing procedure.

22-3 Adjustment and checking

No particular adjustment and checking is required for the power transformer.

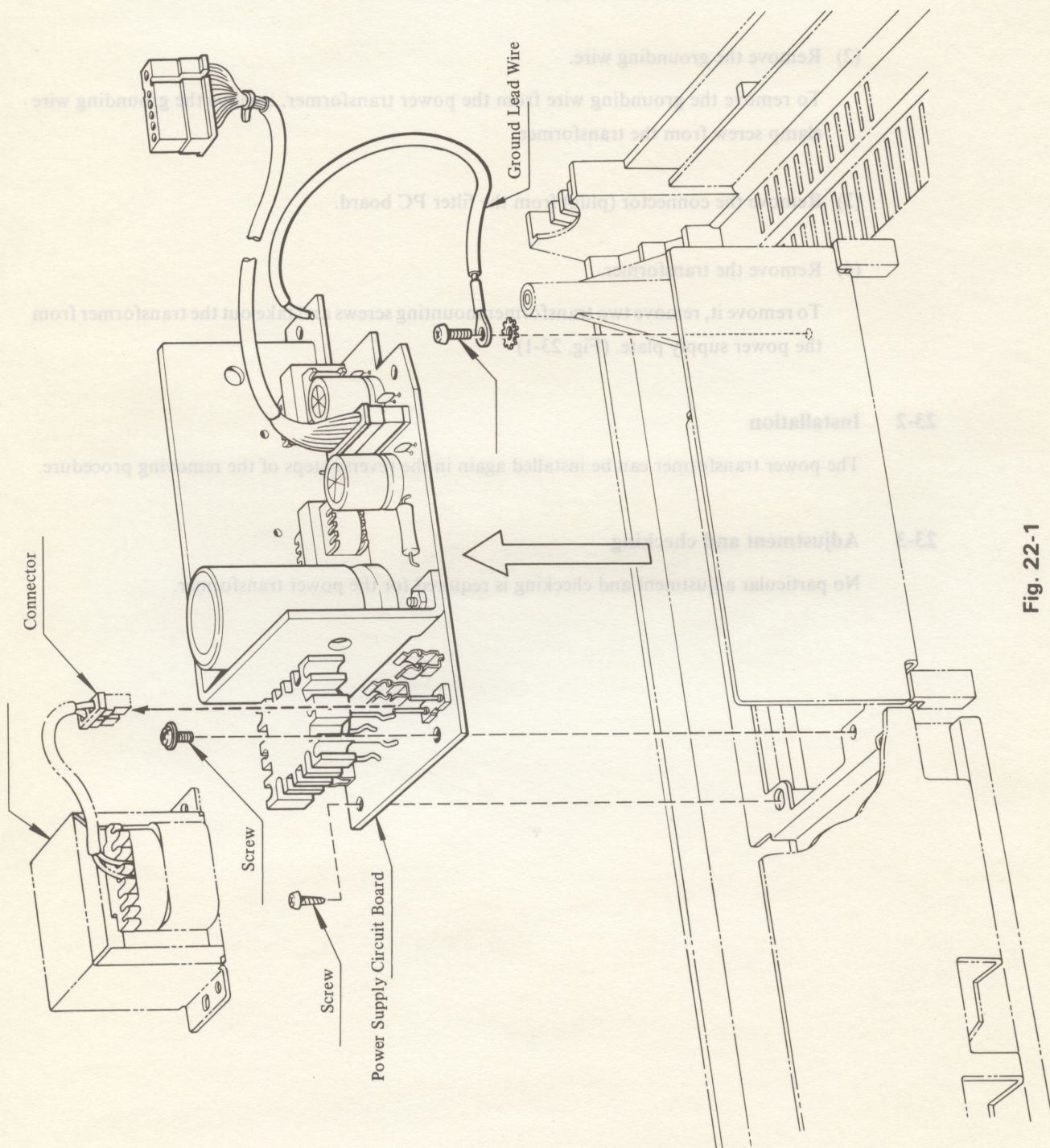


Fig. 22-1

23. Power transformer

23-1 Removal

- (1) Remove the chassis unit.

Refer to Section 3 "Chassis unit".

- (2) Remove the grounding wire.

To remove the grounding wire from the power transformer, remove the grounding wire clamp screw from the transformer.

- (3) Remove the connector (plug) from the filter PC board.

- (4) Remove the transformer.

To remove it, remove two transformer mounting screws and take out the transformer from the power supply plate. (Fig. 23-1)

23-2 Installation

The power transformer can be installed again in the reverse steps of the removing procedure.

23-3 Adjustment and checking

No particular adjustment and checking is required for the power transformer.

24. Filter circuit board

24-1 Removal

(1) Remove the chassis unit.

Refer to Section 3 "Chassis unit."

(2) Remove the grounding wires connected to the power transformer.

(3) Remove the connector from the power transformer.

(4) Remove the power transformer from the chassis unit.

(5) Remove the power board.

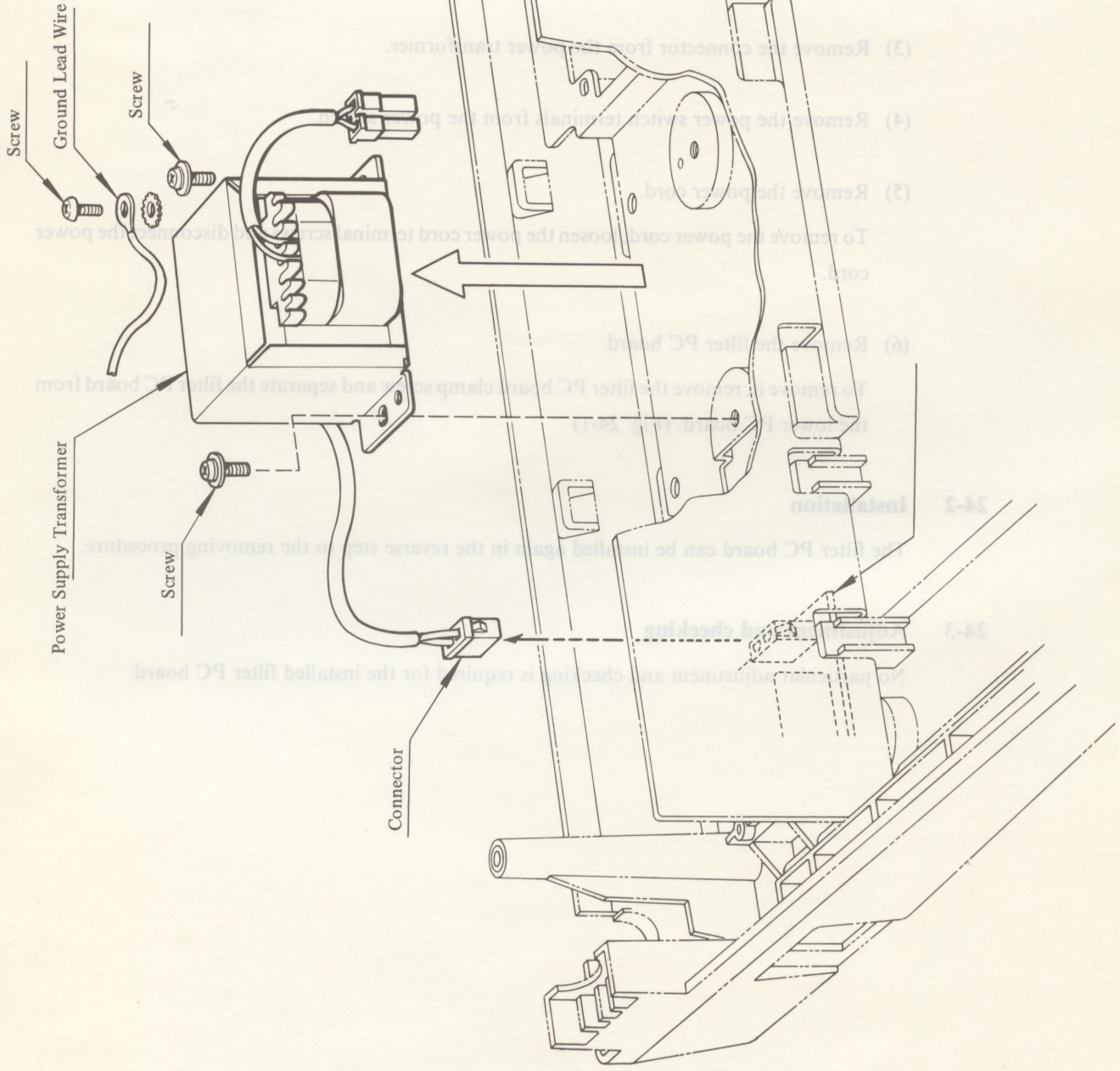


Fig. 23-1

24. Filter circuit board

24-1 Removal

- (1) Remove the chassis unit.

Refer to Section 3 "Chassis unit".

- (2) Remove the grounding wires connected to the power transformer.

- (3) Remove the connector from the power transformer.

- (4) Remove the power switch terminals from the power switch.

- (5) Remove the power cord.

To remove the power cord, loosen the power cord terminal screws and disconnect the power cord.

- (6) Remove the filter PC board.

To remove it, remove the filter PC board clamp screw and separate the filter PC board from the lower PC board. (Fig. 24-1)

24-2 Installation

The filter PC board can be installed again in the reverse step to the removing procedure.

24-3 Adjustment and checking

No particular adjustment and checking is required for the installed filter PC board.

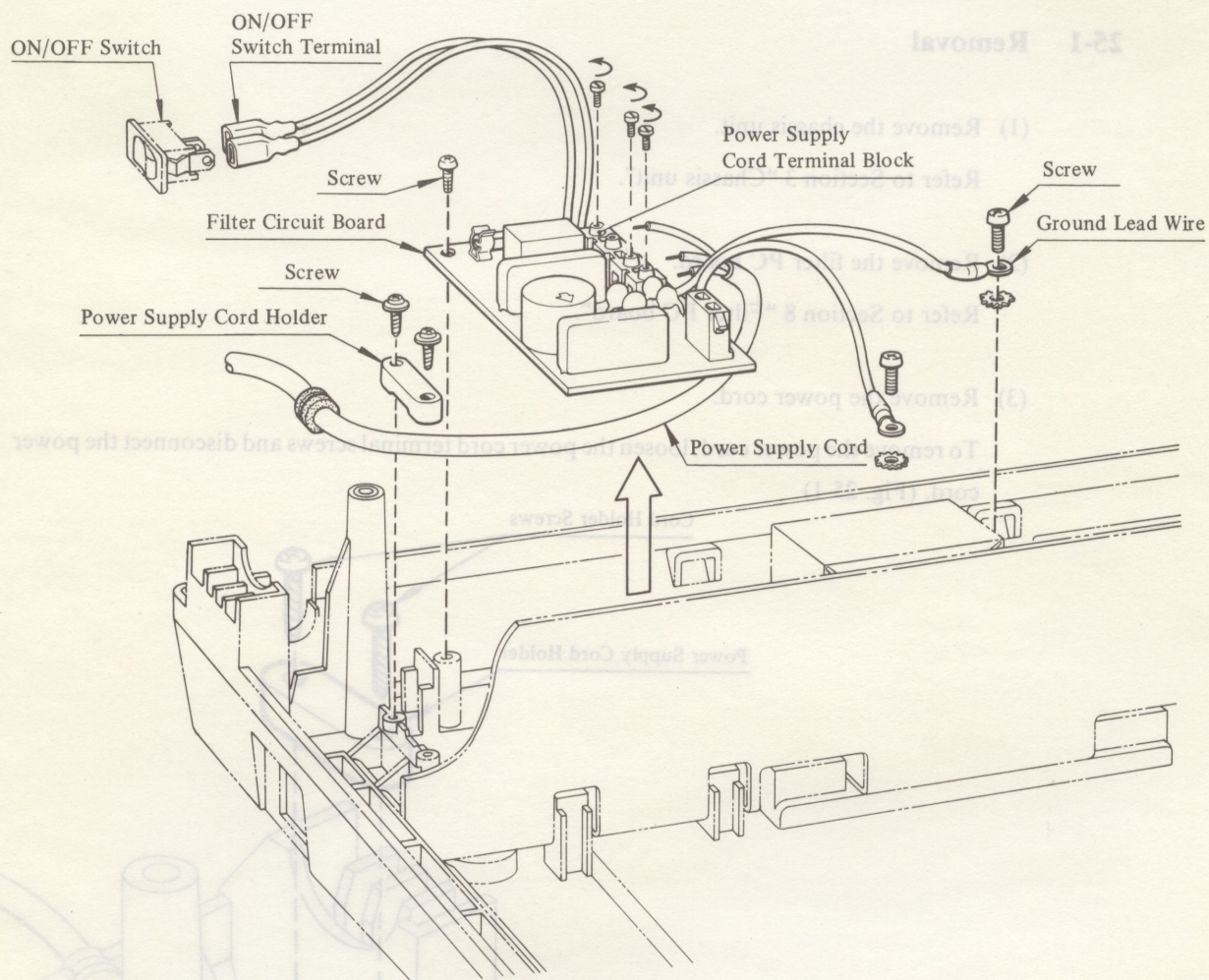


Fig. 24-1

25. Power cord

25-1 Removal

- (1) Remove the chassis unit.

Refer to Section 3 "Chassis unit".

- (2) Remove the filter PC board.

Refer to Section 8 "Filter PC board".

- (3) Remove the power cord.

To remove the power cord, loosen the power cord terminal screws and disconnect the power cord. (Fig. 25-1)

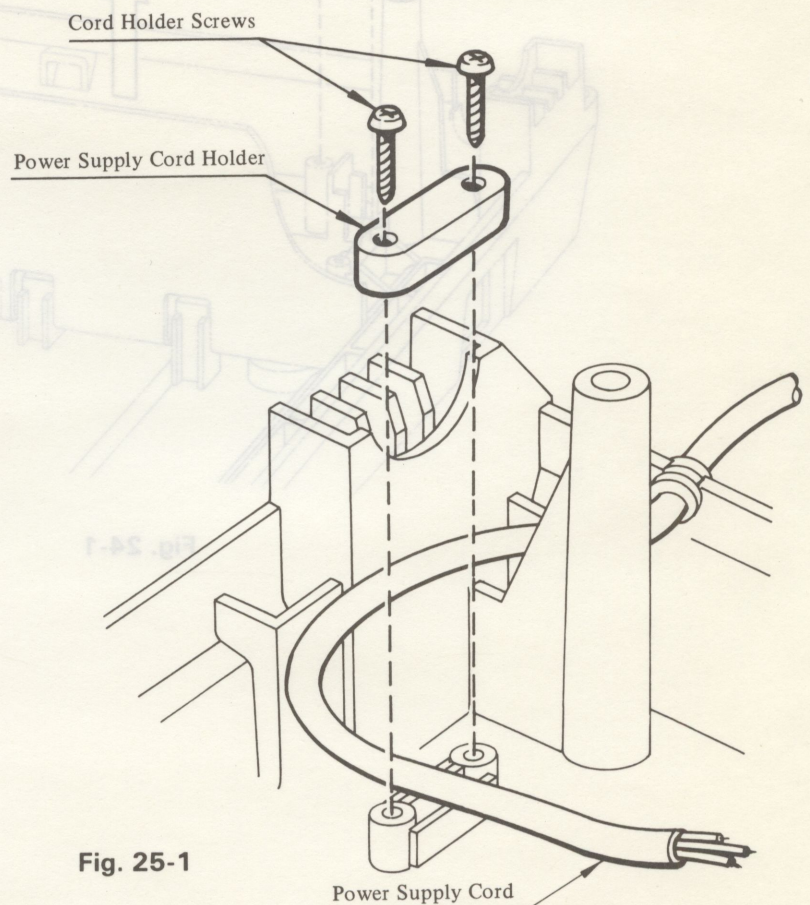


Fig. 25-1

25-2 Installation

The power cord can be connected again in the reverse steps of the removing procedure.

25-3 Adjustment and checking

- (1) Cord bushing

It should be checked that the cord bushing is securely set to the lower cover. (Fig. 25-2)

No.	Place to be lubricated	Lubricant	Frequency	
			Yearly	At part replacement
1	Platen bearing (left/right)	Univay Oil	—	○
2	Paper feed rollers (front/rear)	Epinox Grease	—	○
3	Platen knob springs	Epinox Grease	—	○
4	Cam shaft (cam advance)	Epinox Grease	—	○
5	Paper release lever	Epinox Grease	—	○
6	Paper bail operation (link spring)	Epinox Grease	—	○
7	L.F. intermediate roller	Univay Oil	—	○
8	Carriage adjust lever	Epinox Grease	—	○
9	Carriage guide roller (main chassis)	Univay Oil Silicone Grease	—	○
10	Ribbon feed gear base unit	Silicone Grease	—	○
11	Print hammer unit	Grease B Epinox Grease Univay Oil	—	○
12	Head holder Motor holder	Grease B Epinox Grease	—	○
13	Ribbon vibrator unit	Silicone Grease Epinox Grease	—	○
14	Drive pulley Carriage motor	Silicone Grease	—	○

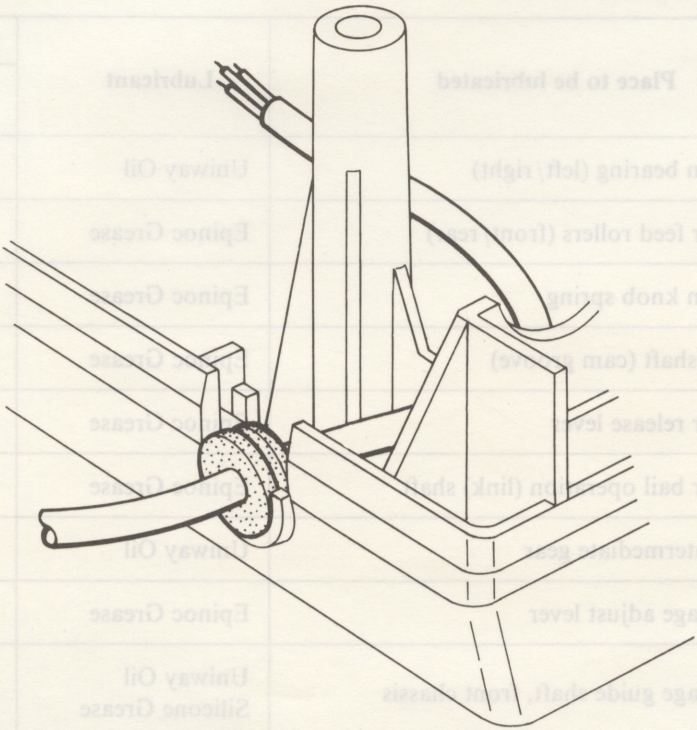
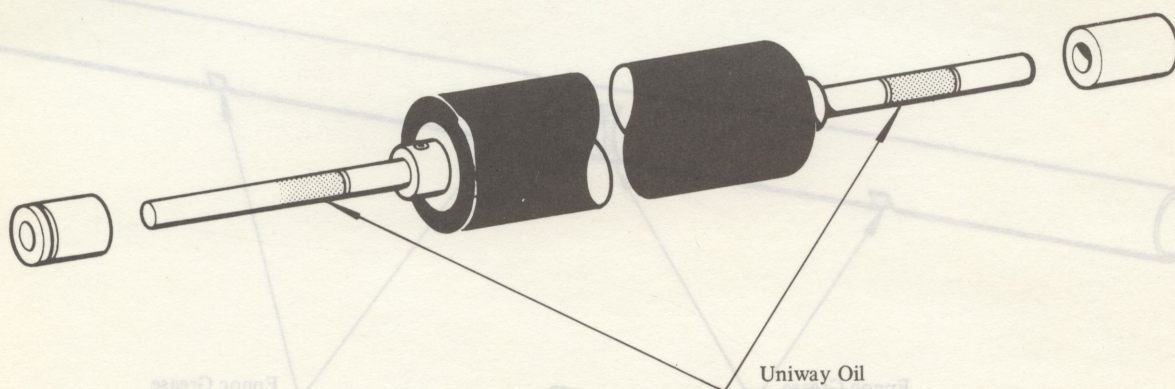


Fig. 25-2

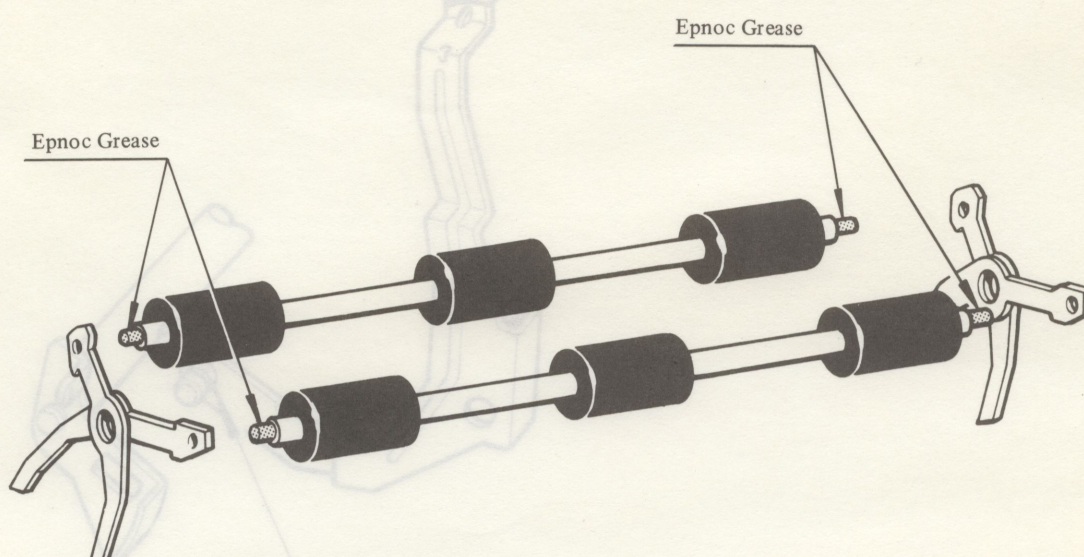
Chapter 5 LUBRICATION STANDARD

No.	Place to be lubricated	Lubricant	Frequency	
			Yearly	At part replacement
1	Platen bearing (left/ right)	Uniway Oil	—	○
2	Paper feed rollers (front/rear)	Epinoc Grease	—	○
3	Platen knob spring	Epinoc Grease	—	○
4	Cam shaft (cam groove)	Epinoc Grease	—	○
5	Paper release lever	Epinoc Grease	—	○
6	Paper bail operation (link) shaft	Epinoc Grease	—	○
7	LF intermediate gear	Uniway Oil	—	○
8	Carriage adjust lever	Epinoc Grease	—	○
9	Carriage guide shaft, front chassis	Uniway Oil Silicone Grease	—	○
10	Ribbon feed gear base unit	Silicone Grease	—	○
11	Print hammer unit	Grease B Epinoc Grease Uniway Oil	—	○
12	Head holder Motor holder	Grease B Epinoc Grease	—	○
13	Ribbon vibrator unit	Silicone Grease Epinoc Grease	—	○
14	Drive pulley Carriage motor	Silicone Grease	—	○

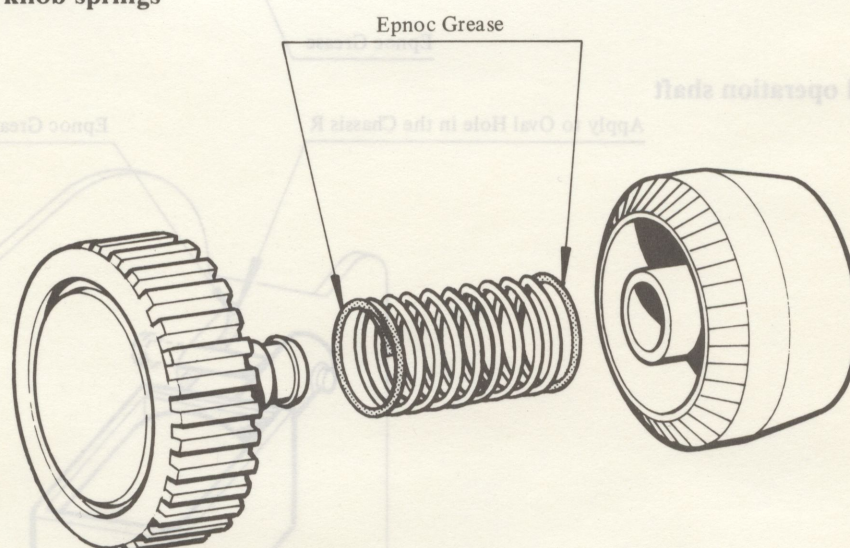
1. Platen bearings R & L



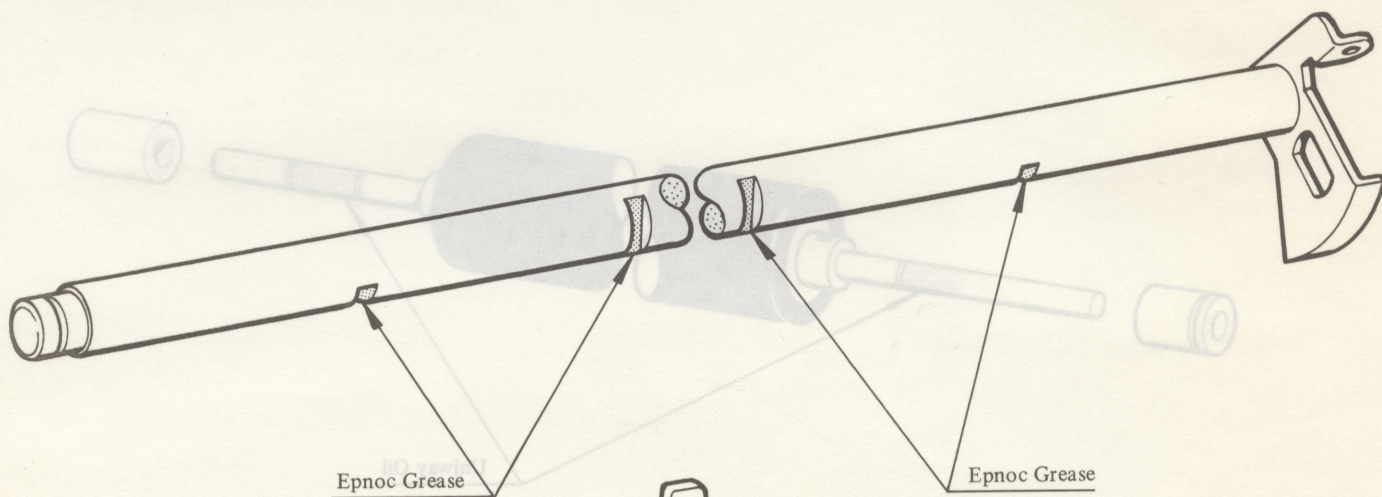
2. Paper feed rollers front and rear



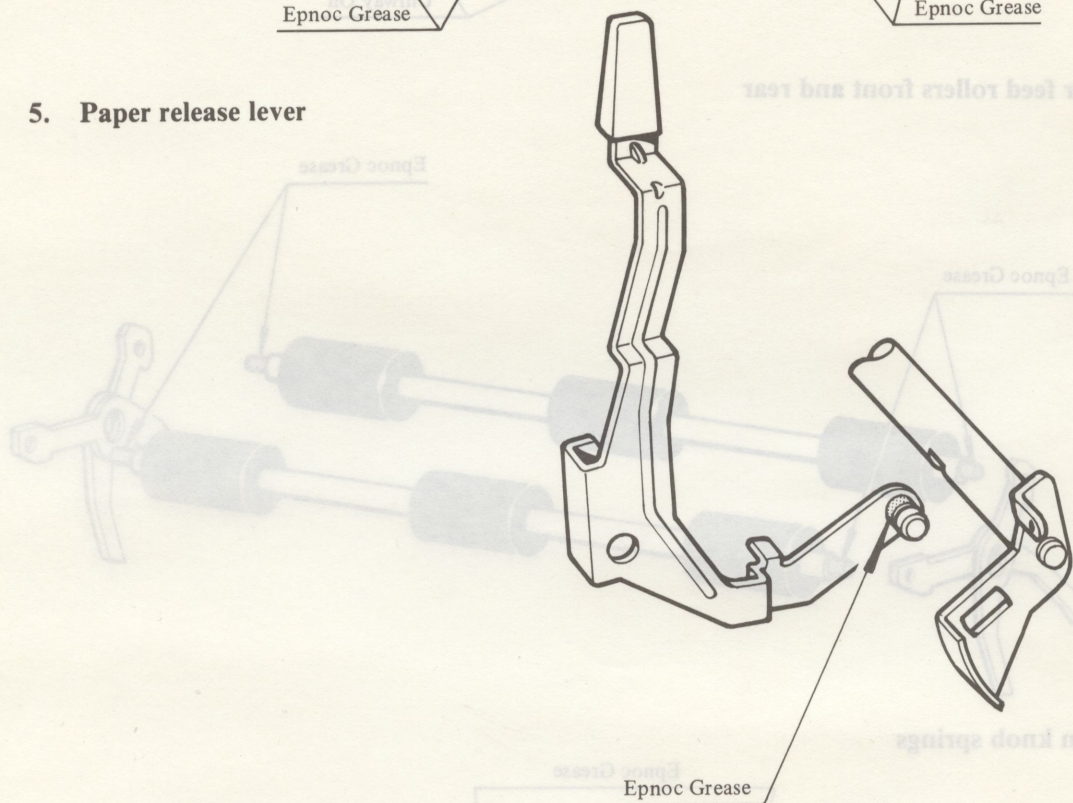
3. Platen knob springs



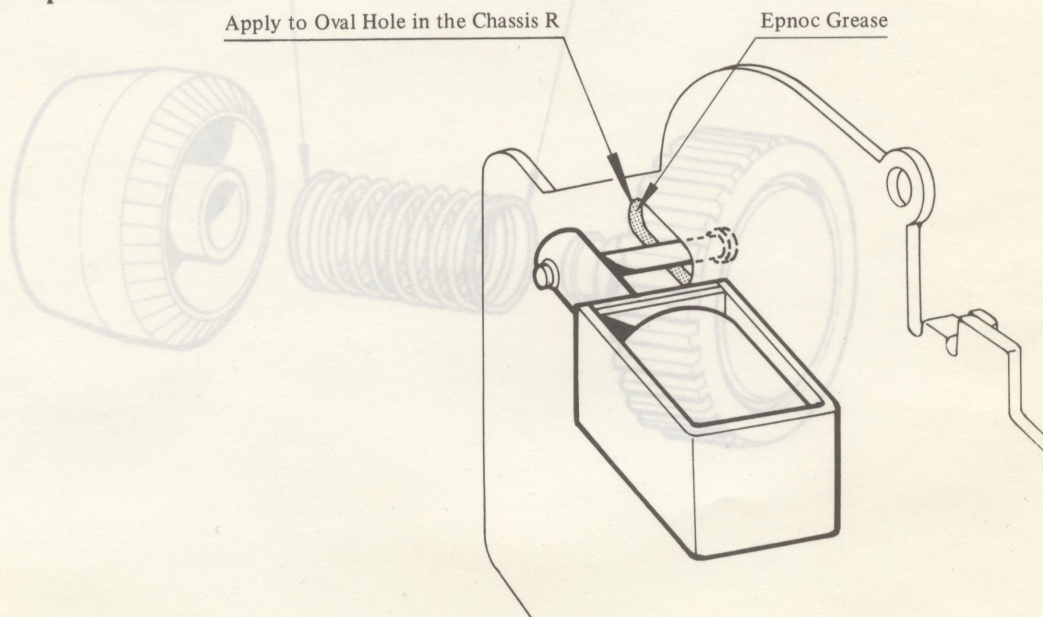
4. Cam shaft unit (Cam grooves)



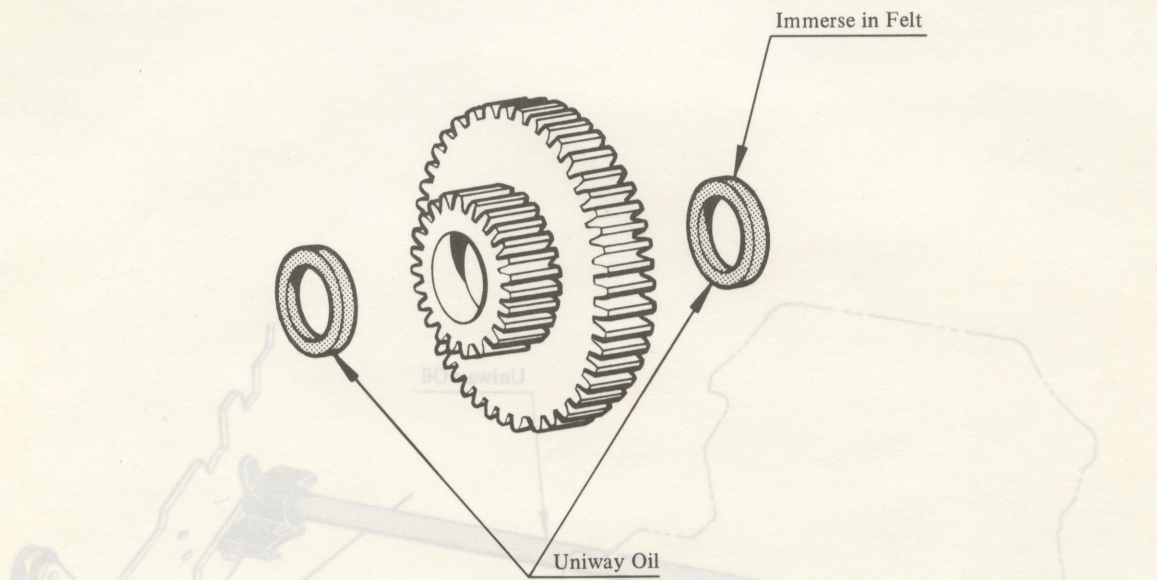
5. Paper release lever



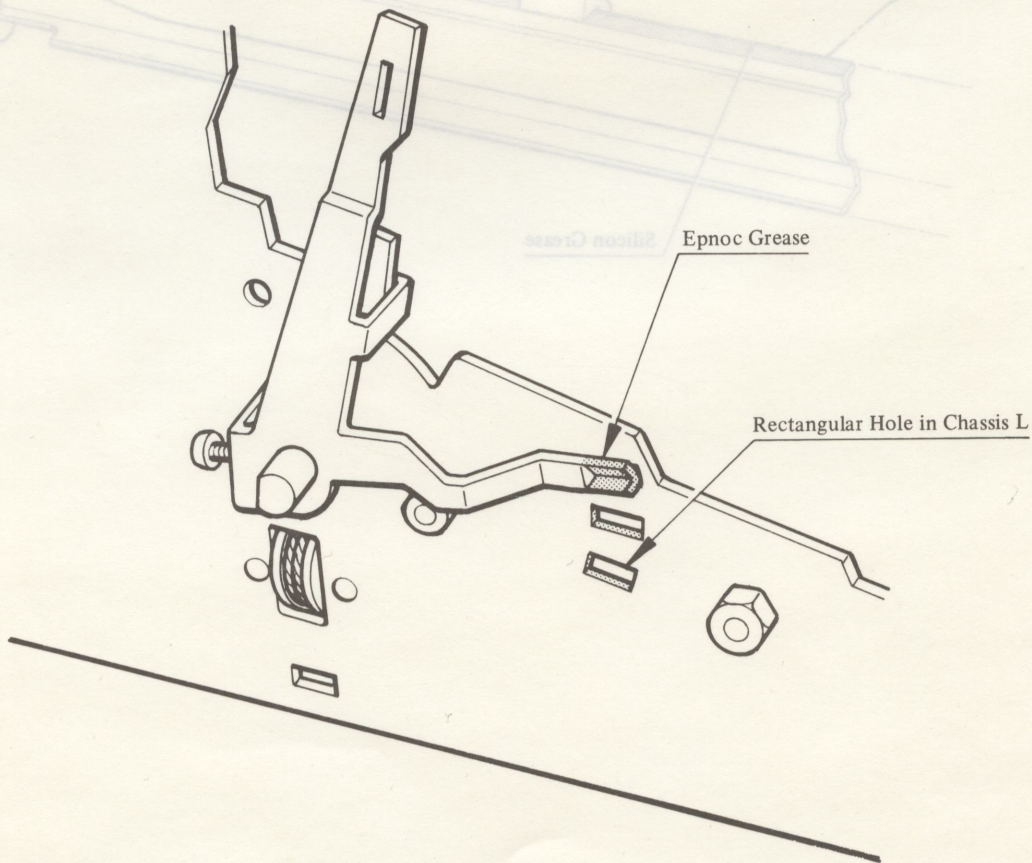
6. Paper bail operation shaft



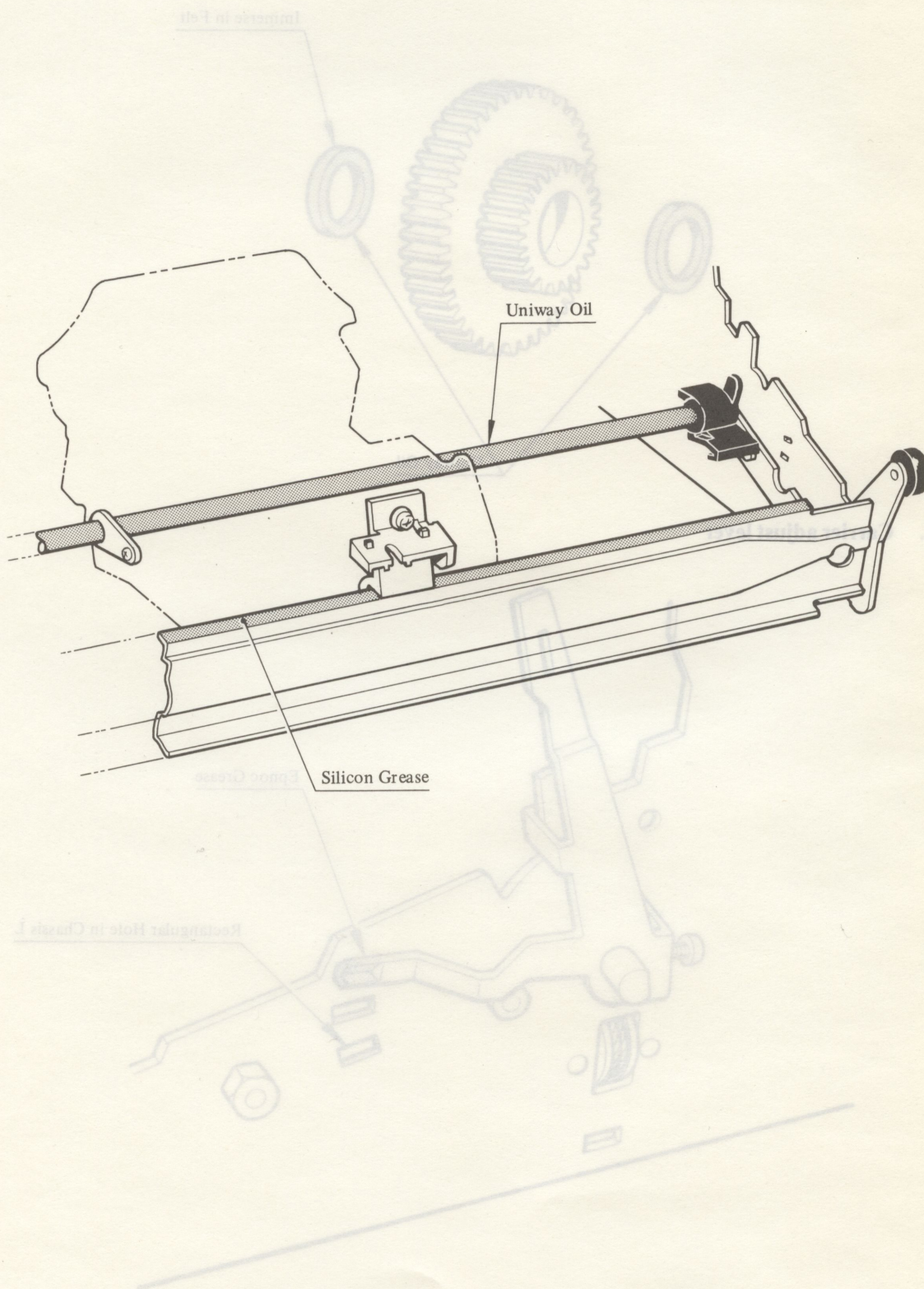
7. Line feed intermediate gear



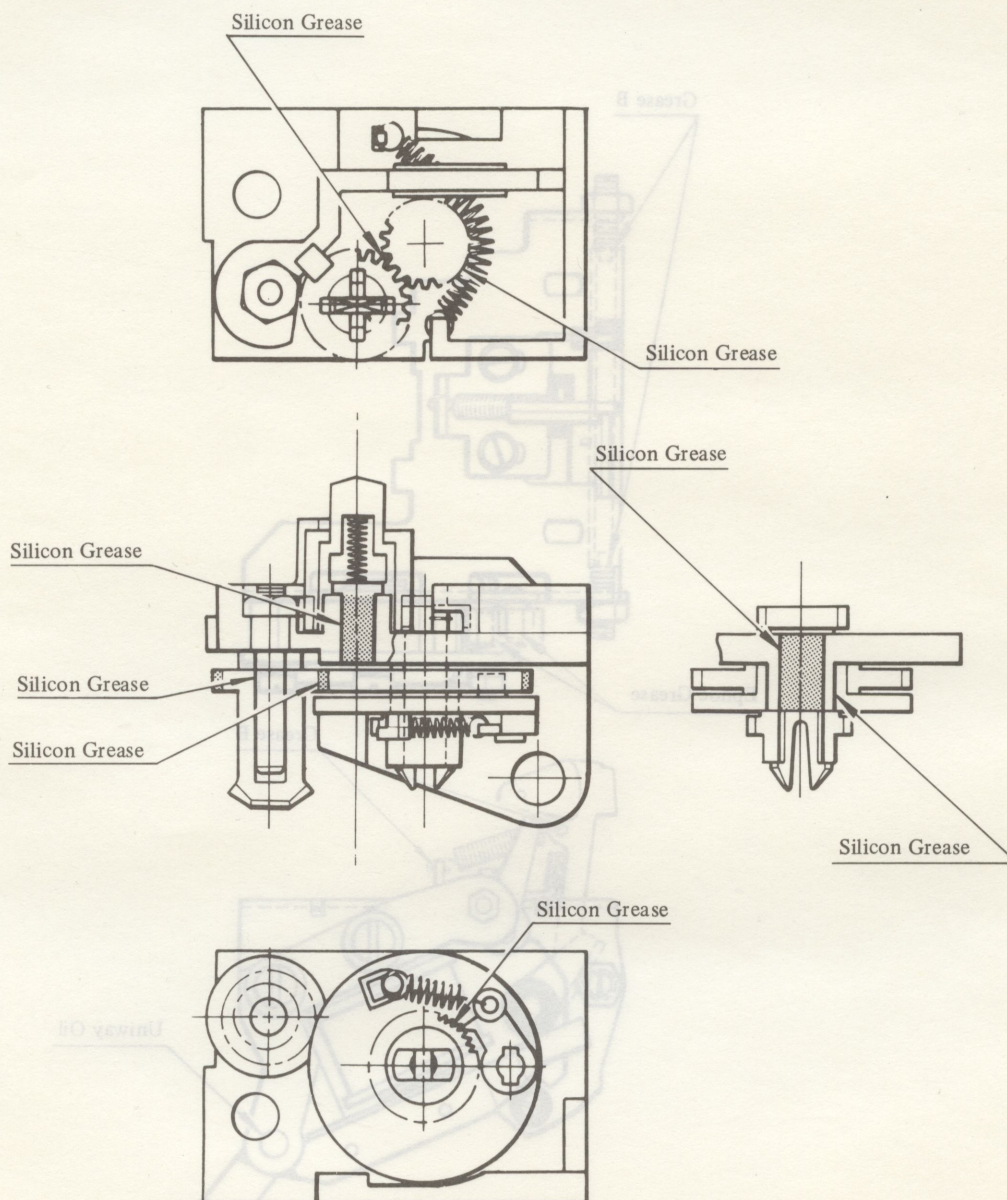
8. Carrier adjust lever



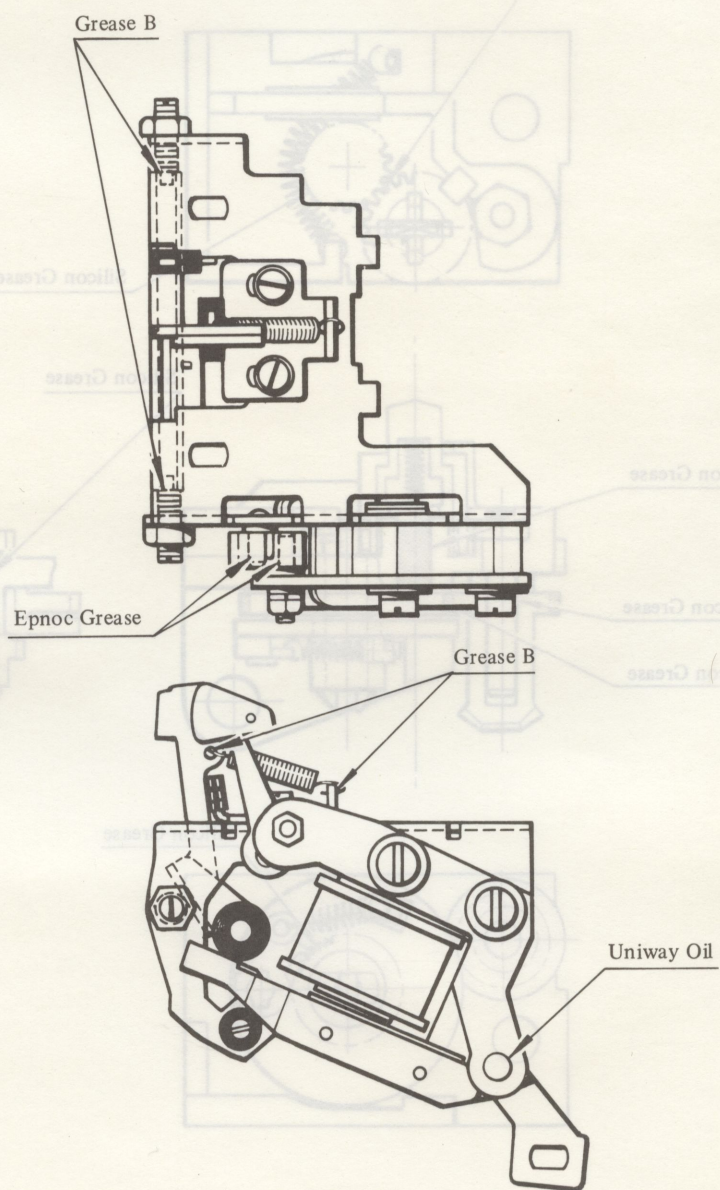
9. Carriage guide shaft & Front chassis



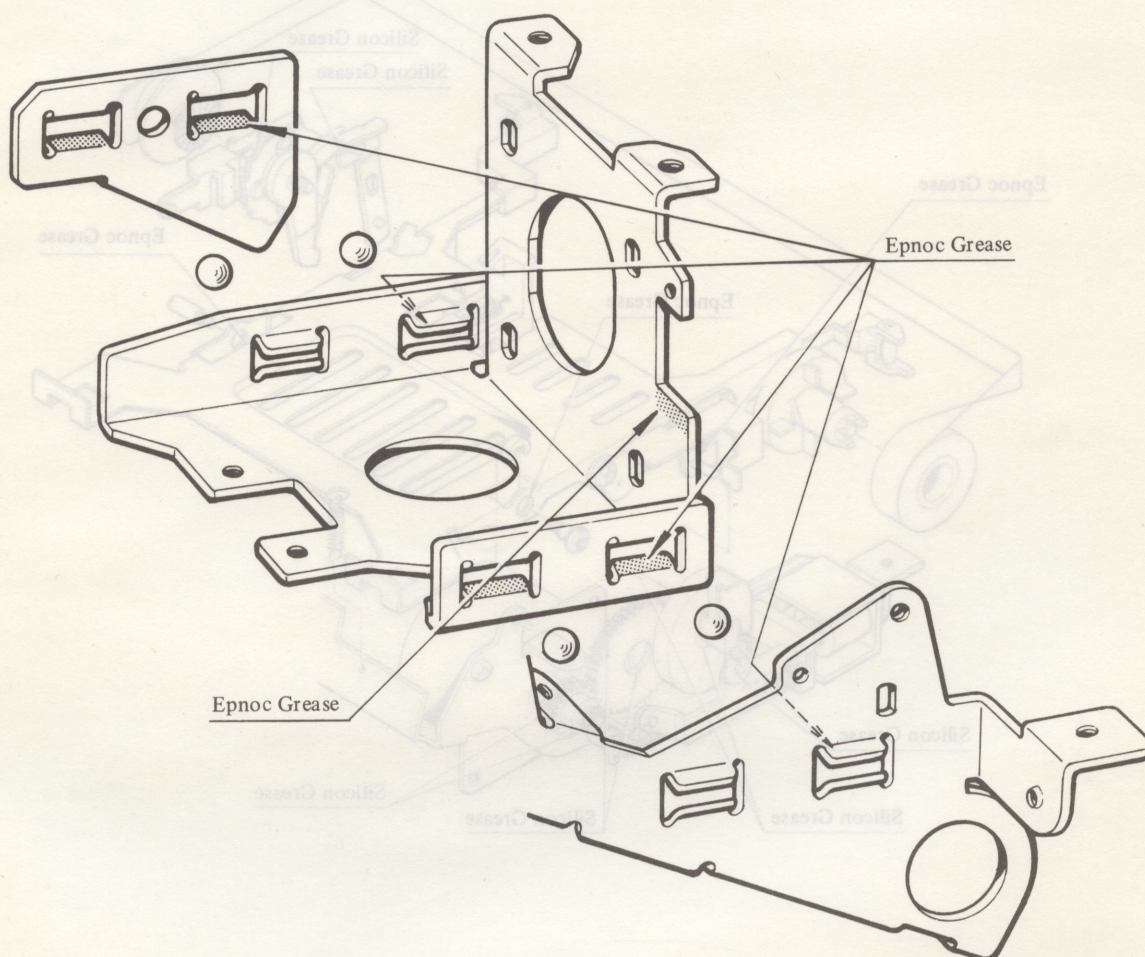
10. Ribbon feed gear base unit



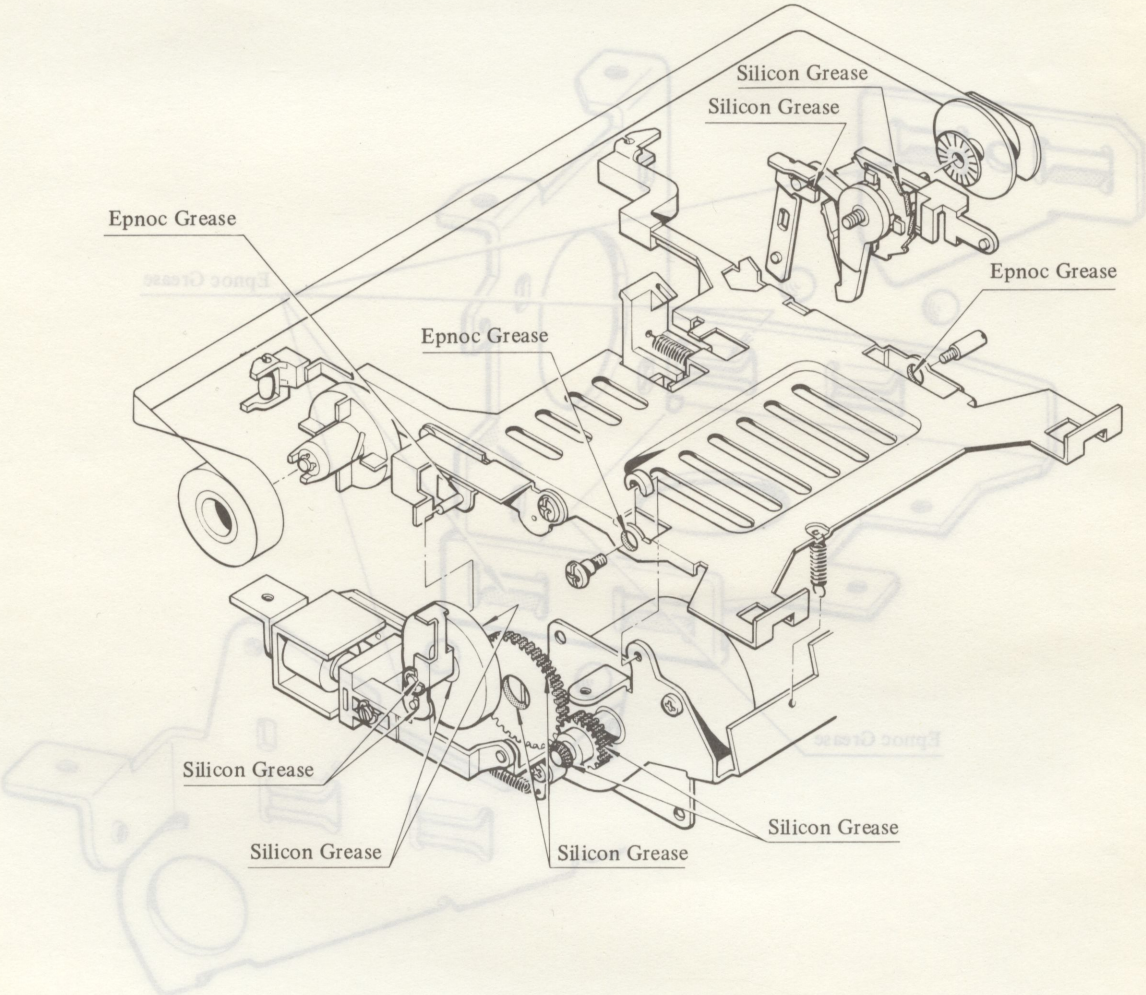
11. Print hammer unit



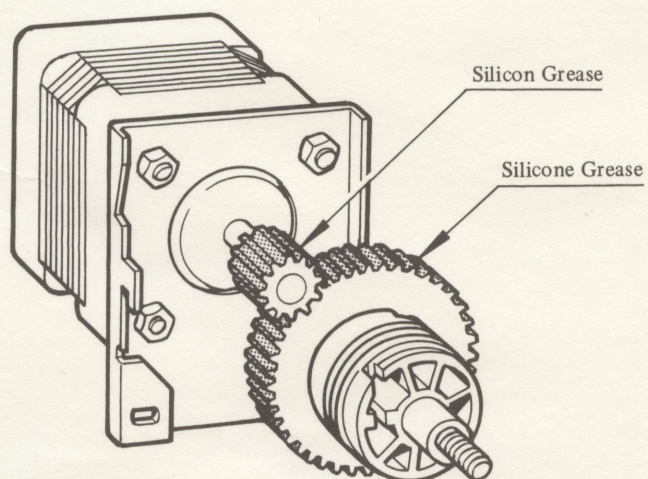
12. Head holder & Motor holder



13. Ribbon vibrator unit



14. Drive pulley & Carriage motor



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